RETRO SPECIAL
Looking back at doom, Half-Life, & more!

MICROPHONE GROUP TEST
How to be heard in style!

BALDUR'S GATE 3
We go back to the Forgotten Realms

AUSTRALIA'S #1 PC GAMING MAG

PC PowerPlay

SINCE 1996

DOOM ETERNAL
The classic shooter is back, And more brutal than ever before!

REMASTER CHIEF
How Halo made the long journey back to the PC

PREVIEW

WORLD OF WARCRAFT SHADOWLANDS

DEATH IS NOT THE END, AS WE DELVE INTO THE NEXT EXPANSION FOR BLIZZARD'S FLAGSHIP MMO

Threadripper 3990X
AMD's BEAST of a CPU put to the the test!

AORUS

NEW AORUS MONITOR LINEUP HAS LANDED!

FI27Q & FI27Q-P

HBR3 allows you to enjoy 2K, 165Hz, HDR, 10 bits color AT THE SAME TIME

2.0 ANC

2.0 BLACK EQUALIZER

NVIDIA G-SYNC

AMD FREESYNC TECHNOLOGY

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PC PowerPlay
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SINCE 1996

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Well ain't this fun?

Remember last issue, when I said it felt like the first couple of months of 2020 felt really and unusually long? Well, boy-howdy did I not know what was coming around the corner!

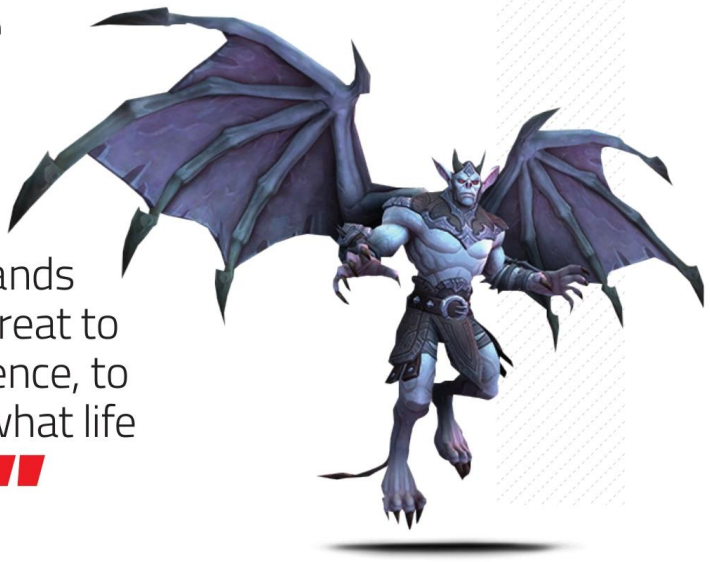
This issue of PCPowerPlay was produced almost completely during the COVID-19 lockdown, with everyone in the office working remotely from home. For obvious reasons, it's a pretty disrupting and distressing time. But, on the upside, it means I can sneak in a little gaming during the work day and no one will ever know! Shh, don't tell anyone...

It's also a handy time for some gentle nostalgia, so I hope this issue's walk down memory lane tickles your fancy as much as it did mine. I can remember watching on avidly as a friend downloaded Doom on a screaming, old-fashioned modem back in the day, and now we've even got a whole new Doom to get to grips with - and that's reviewed this issue as well!

And, of course, we're looking ahead with our usual selection of previews, including the next mammoth expansion for World of Warcraft.

At least we all have a lot of time for the upcoming grind...

David Hollingworth



"The Shadowlands pose a threat to our existence, to life, and what life means..."

PCPP #281

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WORLD OF WARCRAFT SHADOWLANDS

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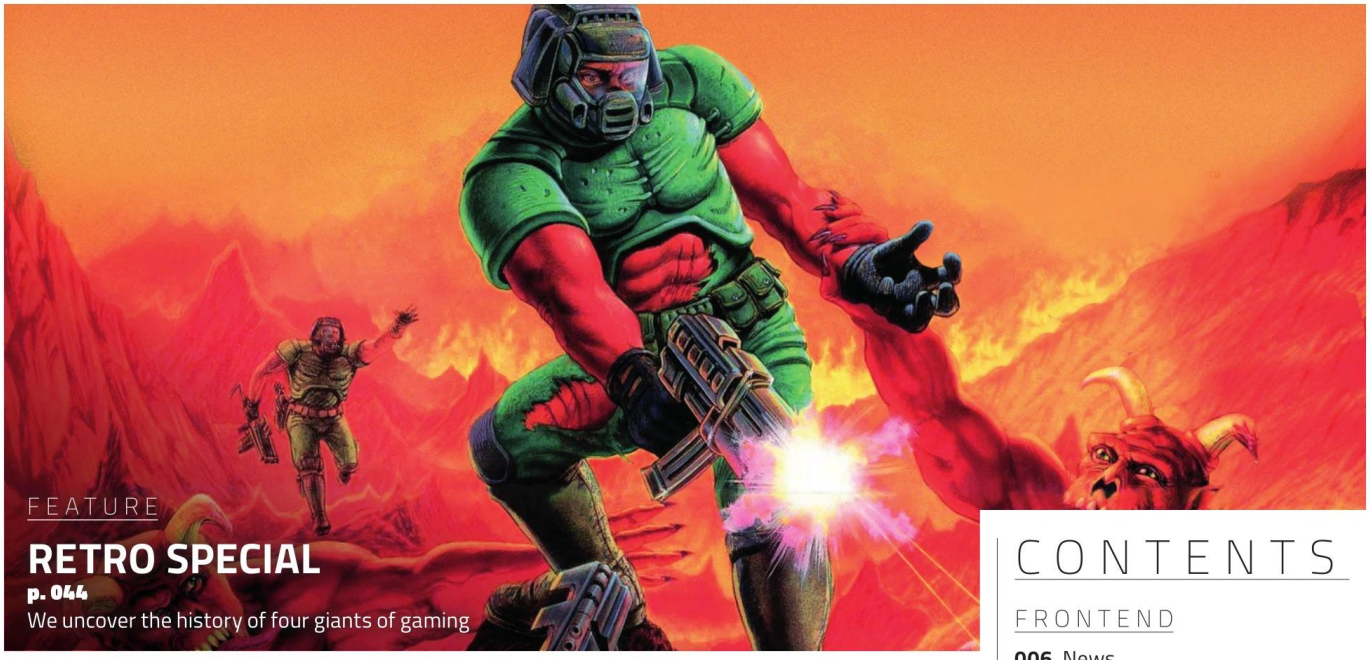
Death is not the end, as we delve into the next expansion for Blizzard's flagship MMO



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We uncover the history of four giants of gaming

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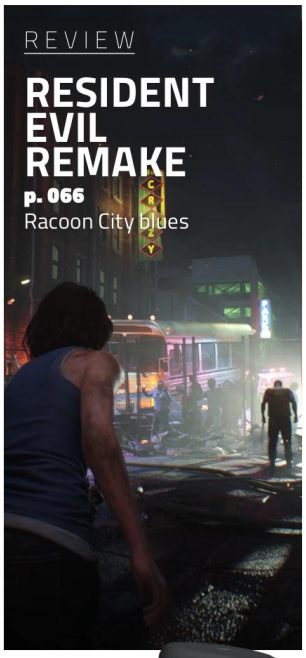
Return to the Forgotten Realms



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Racoon City blues

REVIEW

WARCRAFT III

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Was reforging worth it?

REVIEW

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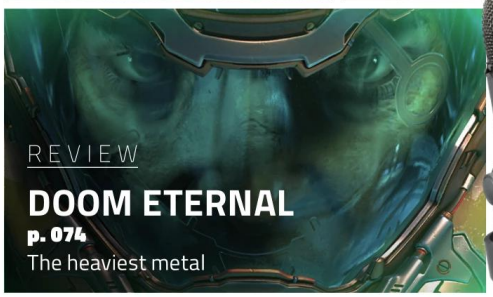
Puppet tactics



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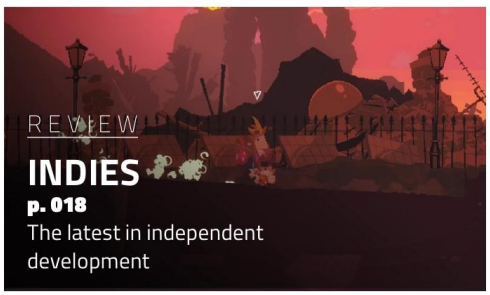
The heaviest metal



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Speak up!

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Game News

Pope Simulator promises a 'realistic' depiction of life as the Supreme Pontiff

Put on your robe and wizard hat.

Did you ever say to yourself when you were young, "When I grow up I want to be the Pope?" No? Well here's your big chance anyway, sort of: Pope Simulator, a new addition to the menagerie of weird, ultra-niche sims on PC that promises to immerse players in a "realistic" depiction of life as the Pontiff.

The game begins on Conclave day, when the College of Cardinals elects a new Pope – that's you. You'll begin your reign by choosing a coat of arms, which will apparently impact the course of your papacy, and from there you'll set out to influence the course of the world through the application of "soft power": Organising pilgrimages, advocating for world peace, moderating conflicts, and otherwise strategically wielding the influence of the Vatican.

"The Pope has no military or economic power behind him, but he has other means of influencing the world, which was evident in the 1980s, for example, when the communist system in Poland collapsed," Ultimate Games CEO Mateusz Zawadzki said. "Our idea assumes the possibility to use, among others, the so-called soft power, and consequently influence the fate of the world and interfere in international politics. All this, of course, in accordance with the vision adopted by the player."

Crysis Remastered is coming to PC with ray tracing, higher resolution textures

Crytek's PC-humbling shooter returns.

Crytek has now officially confirmed that Crysis Remastered is on the way. A release date hasn't been announced, but the now-updated website at crysis.com says it's "coming soon." The game was revealed, seemingly accidentally, on Crytek's website. The page is gone now, but screenshots were all over social media. According to the official description on the site, Crysis Remastered will have "new graphic features", higher quality textures and "CRYENGINE's native hardware and API-agnostic ray tracing solution." The Crysis series kinda lost its way as it went on, but the original features some brilliantly chaotic, freeform action set-pieces. But will it hold up almost 12 years later, even with the addition of ray tracing?

The new MSI RTX 2080 Ti gets 16Gbps memory and a shot at Nvidia's Titan RTX

But will it run Crysis Remastered?

Nvidia's RTX 2080 Ti remains the most powerful graphics card in the GeForce lineup, and with that hallowed ground comes an equally harrowing Founders Edition price tag of US$1,199. Yet that hasn't halted efforts to build bigger, better, and even more expensive graphics cards. In the true spirit of one-upmanship, MSI is now set to be the first to shove 16Gbps memory into its enthusiast-grade RTX 2080 Ti Gaming Z Trio.

According to MSI's news post, the memory switch counts for a 5% performance increase over the otherwise identical 14Gbps RTX 2080 Ti Gaming X Trio. Both feature the same GPU boost clock of 1,755MHz, and the cooling solution remains the same beefy, slightly screwy, design. However, the tweaked memory on the Gaming Z Trio tips it over the line a little ahead of the 14Gbps Gaming X Trio.

That 5% could be enough to see the Gaming Z Trio outperform even Nvidia's super-smart Titan RTX. The inference card built for AI and deep learning is more or less an RTX 2080 Ti with all the extras: the full TU102's 4,608 CUDA Cores, 1,770MHz boost clock, and 24GB of 14Gbps GDDR6 memory.

F1 2020 WILL BE RELEASING THIS JULY WITH A NEW TEAM MANAGEMENT MODE

New circuits, split-screen, and a Schumacher special edition.

Codemasters has announced that F1 2020 will be released on July 10. The racing sim will launch on Steam, PS4, Xbox One, and, for the first time in the series, Google Stadia. F1 2020 will feature a new team management mode alongside its already established career mode. The new management mode, called 'My Team', lets players act as a driver and manager of their own F1 team. There have also been changes to Career mode that will now allow players to choose between a 10 race season, 16 race season, or the full 22 race season. Additionally, the Hanoi Street Circuit in Vietnam and the Zandvoort Circuit in the Netherlands will be joining the other racing tracks. Formula 2 will stay in the game after being added to the series last year, alongside a returning two-player split-screen mode.

Jam

The Destructor Cometh

The software our civilisation depends on is beginning to break under its own weight...

Jonathan Blow is making his own programming language. He calls it 'Jai', and he envisions it as a fully-functional replacement for C++. Not just for making games, but for all other applications.

This may seem like quite the departure for the creator of Braid and The Witness, but it's an idea that's been brewing in Blow's mind for some time now. In university he dabbled with making experimental programming languages. After graduation the delirious day-to-day drudgery of coding in C++ compelled him to craft a clean break from its conventions – its thick sedimentary deposits of legacy cruft.

Blow believes that Jai could ultimately make programmers 50-80% more efficient. He also hopes to improve their quality of life by liberating them from C++'s depressing development environment. These are noble goals, yet Blow also asserts that there is a much higher stakes game in play. He believes that our society's programming knowledge base is in peril, and that our high-tech sector is already undergoing a process of undignified collapse.

Casey Muratori identified the origins of this crisis in his excellent lecture 'The Thirty Million Line Problem.' As recently as the early 90s it was still possible for one person to create an operating system from scratch in as little as 20,000 lines of assembly code. But those days are long gone. Today's operating systems are built on tens of millions of lines of code – cruft upon cruft, and bloat upon bloat. And they just keep getting bigger.

This inefficiency makes us suffer in a multitude of ways every day. You copy and paste some text into Gmail, and the formatting gets stuffed up for no reason. An image takes ten whole seconds to load into Adobe Photoshop. The controls in ArmA 3 lock up and are only released if you tap the Alt key twice. Every single day a large and increasing chunk of your brainpower is dedicated to performing work-arounds for the simplest tasks.

An operating system should work flawlessly, not randomly reboot your computer and destroy all your work.

JAMES COTTEE has seen the future, and it is a poorly optimised executable, stamping on the face of your computer, forever.

Today's IT isn't just draining, it's undignified. Oh, and sometimes people die – remember when Boeing created a self-crashing plane?

The sheer complexity is absurd. Something as fundamental as testing code simply can't be done – there are far too many possible hardware permutations. All you can do is release a game and fix the bug reports as they come pouring in. These days it's physically impossible to guarantee a steady frame rate!

No one has confronted this ridiculous state of affairs because increases in hardware performance have kept pace with the drop in software efficiency. But as the end of Moore's Law looms, the cancerous growth will soon become too monstrous to ignore.

Jonathan Blow takes this problem extremely seriously. Not just because he believes that coders and consumers alike deserve a better computing experience, but because all this software bloat is a threat to civilisation itself. Blow has cited the infamous Bronze Age Collapse as an example of what happens when a very complex society responds poorly to external shocks – if the key knowledge that makes a civilisation function is not passed down from one generation to the next, the collapse of living standards is sudden, and utter.

> "An operating system should work flawlessly, not randomly reboot your computer and destroy all your work."

We can already see what happens when programming knowledge is lost. Just the other day the governor of New Jersey put out a desperate call for COBOL programmers when his state government's antique mainframes buckled under the weight of requests for COVID-19 relief benefits. New hires at Cloud Imperium are expected to wrangle a code base that's almost a decade old; they're forced to scry the reasoning of CryEngine coders who've long since left for greener pastures.

If you're still quarantined in an Isolation Cube when you're finished reading this magazine, what better way to pass the time than with YouTube vids lamenting the ghastly state of modern software – Jonathan Blow has conducted several interviews and lectures on this depressing topic, explaining how in his own small way he's fighting to turn the tide.

You can also hear perspectives from those who chose Faust's bargain. On the GDC YouTube channel the creator of The First Tree explains how he cranked out a profitable game: by making extensive use of stock art assets, by making the two-hour story as cloying and mawkish as possible, and by writing a jumble of completely unoptimised spaghetti code that just barely executed.

It's a stark contrast, representing a fundamental decision we all must make. Do you want to leave the world in a better state than when you found it? Or do you want to take the money and run?

Choose, dear reader.

Choose and perish. PC

CORSAIR
GAME IN THE
FAST LANE
UP TO
60FT
SLIPSTREAM
CORSAIR WIRELESS TECHNOLOGY
Up to 60ft of wireless range
Sub-1ms latency
Multiple devices, just one receiver

AUSTRALIAN PC AWARDS 2020

The 2020 Australian PC Awards

Celebrating the very best in PCs and PC gear.

In the fiercely competitive and innovative world of the PC, it's always an exciting thrill seeing products and technologies come along and shake things up and move the industry forward. We use and choose good gear because of the performance on offer, the nice design, the new things it lets us do. We buy something for these reasons, and are always mindful of the value when comparing options.

It is these tangibles that drive the Australian PC Awards each year. The Awards are a joint undertaking by several of Future Publishing's technology titles, being APC, TechLife, PC PowerPlay, TechRadar and PC Gamer. The teams behind these magazines and sites live, love and breath PC tech, and together we have distilled all of the most notable releases of 2019 across all of the important PC categories.

This year we have introduced a new and particularly exciting Award. Excellence is as broad as the world of technology itself, and is awarded to "the person, product or technology that advanced the PC more than any other in 2019." We had a lot of fascinating debate coming up with the shortlist for that award, but there was none when it came to choosing the irrefutably worthy winner.

We hope you agree with at least some of our choices. We know not everyone will, but we are quite certain that across all of these finalists and winners are some superb products and technologies that are being used and appreciated right at this moment by many of you.

We extend warm congratulations to the winners, and the people behind the products that work so hard to bring you the best.

VIDEO CARDS

BEST OEM BUDGET CARD – NVIDIA

FINALISTS: MSI GeForce GTX 1660 Super Gaming X 6GB, Gigabyte GeForce GTX 1660 Super Gaming OC, Asus GeForce GTX 1660 Super TUF Gaming X3 OC, Gigabyte GeForce GTX 1650 Super WindForce OC 4GB, MSI GeForce GTX 1650 Super Ventus XS OC 4GB

WINNER: Gigabyte GeForce GTX 1660 Super Gaming OC

This card is faster than a stock GTX 1660 Ti, it's cheaper plus Gigabyte gave it a solid OC that makes it faster than even more

BEST OEM BUDGET CARD – AMD

FINALISTS: Gigabyte Radeon RX 5500 XT Gaming OC 4GB, Asus Radeon RX 5500 XT Dual EVO OC 8GB, MSI Radeon RX 5500 XT Mech OC 4GB, PowerColor Radeon RX 5500 XT Red Dragon 8GB

WINNER: MSI Radeon RX 5500 XT Mech OC 4GB

Superb build quality combined with cool and quiet running and competitive value make the MSI RX 5500 XT the pick of AMD's budget bunch.

BEST OEM PERFORMANCE CARD – NVIDIA

FINALISTS: Asus ROG-Strix-RTX2080TI-O11G-Gaming, EVGA GeForce RTX 2080 Super FTW 3 Ultra, Asus GeForce RTX 2080 Super ROG Strix OC, Gigabyte GeForce RTX 2080 Super Aorus Waterforce 8GB, Asus ROG Strix GeForce RTX 2070 Super 8GB, Aorus GeForce RTX 2070 Super 8G

WINNER: MSI GeForce RTX 2080 Super Gaming X Trio

Cheaper than many other variants this usually outpaces them, is quieter and has more

BEST OEM PERFORMANCE CARD – AMD

FINALISTS: Sapphire Radeon RX 5700 XT Nitro+, PowerColor Radeon RX 5700 XT Red Devil, Asus Radeon RX 5700 XT ROG Strix OC, Gigabyte Radeon RX 5700 XT Gaming OC 8GB, Asrock Taichi Radeon RX 5700 XT 8GB, MSI Radeon RX 5700 XT Gaming X 8GB

WINNER: Asus Radeon RX 5700 XT ROG Strix OC

Coming in $50 cheaper than more expensive models with better cooling solutions, the custom PCB design and VRM topology help this card beat the rest relying on reference designs.

MOTHERBOARDS

BEST MOTHERBOARD MAKER

FINALISTS: Asus, Asrock, Gigabyte/Aorus, MSI

WINNER: Asus

Asus motherboards repeatedly impress with their reliability, refinement and continual innovation.

BEST PREMIUM MOTHERBOARD – INTEL

FINALISTS: Gigabyte X299X Designare, Asus Prime X299 Edition 30, Asus Maximus XI Formula, Gigabyte Z390 Aorus Xtreme Waterforce

WINNER: Asus Maximus XI Formula

The Asus ROG Maximus XI Formula is perfectly suited to being the stunning centrepiece of an overclocked RGB

BEST PREMIUM MOTHERBOARD – AMD

FINALISTS: Gigabyte X570 Aorus Master, Gigabyte X570 Aorus Xtreme, MSI X570 Ace, Asus ROG Zenith II Extreme

WINNER: Gigabyte X570 Aorus Master

The Gigabyte X570 Aorus Master offers a very well balanced blend of features and design choices combined with a real feel

BEST BUDGET MOTHERBOARD – INTEL

FINALISTS: Gigabyte B365M Aorus Elite, Asrock Z390 Steel Legend, Asus ROG Strix B365-F

WINNER: Asus ROG Strix B365-F

The ROG Strix B365-F is a high end motherboard without the high-end price.

BEST BUDGET MOTHERBOARD – AMD

FINALISTS: Asrock X570 Phantom Gaming 4, MSI B450 Tomahawk Max, MSI X570-A Pro

WINNER: Asrock X570 Phantom Gaming 4

The Asrock X570 Phantom Gaming 4 offers a feature list that would be at home on a board costing $100+ more.

STORAGE

BEST INTERNAL STORAGE MAKER

FINALISTS: Adata, Intel, Samsung, WD, Crucial, Team T-Force, Corsair, Kingston (HyperX), Seagate

WINNER: Adata

Back in the Australian market in a big way, with premium performance products at budget prices.

BEST EXTERNAL STORAGE MAKER

FINALISTS: Seagate, WD, Adata, Samsung

WINNER: WD

The uniquely fast and versatile flagship WD Black P50, shows WD is committed to developing the external SSD market.

BEST HOME OR SOHO NAS

FINALISTS: QNAP QGD-1600P, Synology DS419slim, Synology DS1019+, QNAP TVS-672N, QNAP TVS-872N, Asustor AS5304T

WINNER: Synology DS1019+

Synology's latest iteration DiskStation Manager keeps it at the top of the market and the five bays and 8GB of RAM at an affordable price in the DS1019+ makes it the best buy.

CPU

PROUDLY PRESENTED BY CORSAIR

BEST VALUE CPU

FINALISTS: AMD Ryzen 5 3600, AMD Ryzen 5 3600X, AMD Ryzen 5 3400G, Intel Core i5 9400F, Intel Core i5 9600KF

WINNER: AMD Ryzen 5 3600

The AMD Ryzen 5 3600 redefines the mainstream CPU market bringing high performance computing within the reach of everyone.

BEST PERFORMANCE CPU

FINALISTS: AMD Ryzen 9 3900X, AMD Ryzen 9 3950X, Intel i9 10980XE, AMD Threadripper 3970X, Intel Core i7 9700KF, AMD Ryzen 7 3700X

WINNER: AMD Ryzen 9 3900X

The 3900X offers sensational performance across all workloads to go along with low power consumption and temperatures.

SYSTEMS

BEST VALUE LAPTOP OR 2-IN-1

FINALISTS: Aorus 15, Asus TUF Gaming FX505DU, Metabox Alpha-X NH58ED, Huawei MateBook 13, Acer Aspire 5 A515

WINNER: Acer Aspire 5 A515

The Acer Aspire 5 strikes a delicate balance between features and finances offering a solid CPU and a long battery life at a competitive price point.

BEST PREMIUM LAPTOP OR 2-IN-1

FINALISTS: Apple MacBook Pro 16, Gigabyte Aero 15 XA OLED, Huawei MateBook Pro X, Dell XPS 15 OLED, Lenovo Yoga C940, Microsoft Surface Pro 7, Asus Zenbook, Razer Blade Stealth 13 (2019), 14" Acer Swift 5

WINNER: Apple MacBook Pro 16

The new MacBook Pro 16's bigger screen, more immersive speakers, magic keyboard and superior thermal management system make it a stand out performer in 2019.

BEST GAMING LAPTOP

FINALISTS: Razer Blade Pro 17, Asus ROG Zephyrus SGX531, MSI GS75 Stealth 8SG, Razer Blade 15 Advanced

WINNER: MSI GS75 Stealth 8SG

The GS75 Stealth from MSI combined a powerful component set with a big screen, sleek form factor, generous battery, RAID 0 SSDs and a competitive price-point to take out this years best gaming laptop.

BEST DESKTOP PC BUILDER

FINALISTS: HP, Corsair, Dell, Aftershock, Alienware, PC Case Gear, PLE, Scorptec, Mwave, TI Computers

WINNER: Aftershock PC

Stunning pro-modder-level craftsmanship and build quality for everyone.

COMPONENTS AND PERIPHERALS

BEST MEMORY MAKER

FINALISTS: Thermaltake, Team T-Force, Gigabyte, Adata, Crucial, Kingston (HyperX), Corsair, G.Skill

WINNER: Team T-Force

Consistently the best value through 2019.

BEST COOLING PRODUCT

FINALISTS: Thermaltake Floe DX RGB 360, Corsair Hydro Series H100i RGB Platinum 240 Special Edition in White, Deepcool Gamer Storm Captain 240 Pro, Asus ROG Ryuo 240

WINNER: Corsair Hydro Series H100i RGB Platinum 240 Special Edition in White

Corsair delivers system builders the option of a great-performing liquid cooler with manageable noise levels.

BEST GAMING MONITOR

FINALISTS: Samsung CRG9 (49"), Asus ROG Swift PG35VQ, Acer Predator X35, Gigabyte Aorus FI27Q-P, Samsung CRG5 (27"), Dell S3220DGF

WINNER: Dell S3220DGF

The Dell S3220DGF is an ideal jumbo monitor for users needing a practical work and high-performance gaming screen. With 165Hz, FreeSync 2 HDR, excellent contrast and accurate colour, it's well-suited for just about anything.

BEST PRODUCTIVITY MONITOR

FINALISTS: Samsung UHD Space Monitor (32"), Samsung WQHD Space Monitor (27"), Acer XR342CKP, Dell Ultrasharp U3219Q

WINNER: Dell Ultrasharp U3219Q

A bright and vibrant Ultra HD display with outstanding connectivity that is perfect all for workplace applications such as video-conferencing and data modelling.

BEST GAMING KEYBOARD

FINALISTS: Razer Huntsman Tournament Edition, Asus ROG Strix Scope, Corsair K70 RGB MK.2 SE Cherry MX Speed Special Edition in White, HyperX Alloy Origins, SteelSeries Apex Pro

WINNER: HyperX Alloy Origins

A stripped down gaming experience that dedicates itself to performance without wasting any space.

BEST PRODUCTIVITY KEYBOARD

FINALISTS: Satechi Aluminum Bluetooth Keyboard, Logitech MX Keys, Logitech Craft, Logitech K580 Slim Multi-Device, HP Pavilion 400 Wireless Keyboard

WINNER: Logitech MX Keys

Pairs with multiple devices and can control them all without fuss, and it's lovely to type on.

BEST GAMING MOUSE

FINALISTS: Razer Viper Ultimate, Corsair Ironclaw RGB Wireless Gaming Mouse, Asus ROG Gladius II Wireless, Razer Viper, Logitech G502 Lightspeed Wireless

WINNER: Razer Viper Ultimate

If you're a left-handed gamer who's looking to invest in something premium and wireless, the Razer Viper Ultimate is worth a look.

BEST PRODUCTIVITY MOUSE

FINALISTS: Logitch MX Vertical, Logitech MX Master 3, Steel Series Rival 710, Corsair Dark Core RGB SE, Razer Basilisk Essential

WINNER: Logitech MX Vertical

Innovative ergonomic design along with Logitech's usual high quality.

BEST GAMING HEADPHONES

FINALISTS: Razer Kraken Ultimate headset, Corsair Virtuoso RGB Wireless SE, Audeze Mobius, SteelSeries Arctis 1

WINNER: Audeze Mobius

Quite simply the best set of gaming headphones we've found in a long time, with a truly unique and powerful soundscape thanks to planar speaker tech and head-movement-based 3D positional sound.

BEST PC CASE

FINALISTS: Lian Li PC-011, Nzxt H710i, Corsair iCUE 465X RGB Smart Case, Cooler Master MasterBox Q500L, Lian Li Lancool II, Thermaltake Level 20 GT ARGB, Fractal Design Define S2 Vision

WINNER: Nzxt H710i

Nzxt's case has a layout that's second to none. You'll pay a premium for it, but it's worth the price.

BEST ROUTER

FINALISTS: TP Link Archer AX11000, Asus AiMesh AX6100 WiFi System (RT-AX92U 2 Pack), D-Link DIR-3060, Asus GT-AX11000, Netgear AX6000, DrayTek Vigor2926Lac

WINNER: TP Link Archer AX11000

Supreme AX11000 performance that exceeded our expectations. If you absolutely must have the best, then this is it.

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RESELLER

PC CASE GEAR

BEST ENTHUSIAST RESELLER
FINALISTS: PLE, PC Case Gear, Scorptec, Mwave, JW, TI Computers, Umart, AusPCMarket, AfterShock PC
WINNER: PC Case Gear
A wide range of well-balanced aesthetically pleasing systems combined with a fast website with the latest in hardware always available.

JB HI-FI

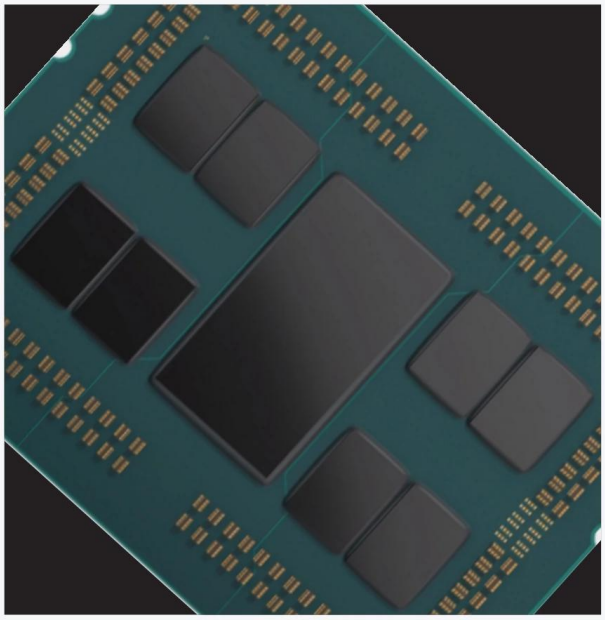
BEST CONSUMER RESELLER
FINALISTS: JB Hi-Fi, Officeworks, Bing Lee, Good Guys, Kogan, Harvey Norman
WINNER: JB HI-FI
Enormous range and variety of tech products and PC gear.

EXCELLENCE AWARD

For the person, product or technology that advanced the PC more than any other in 2019.

FINALISTS:
Nvidia RTX
AMD Ryzen 3rd-gen CPUs
Intel Ice Lake 10th gen mobile CPUs
AMD Zen 2 chiplet architecture
TSMC's 7nm process
Phison PS50 series SSD controllers
OLED screens
Wi-Fi 6
Intel Project Athena

WINNER:
AMD Zen 2 chiplet architecture
Set the foundation for an unprecedented disruption in CPU pricing and performance – the effects of which will be seen for many years – and is the most significant and impactful evolution in PC CPU design since the first dual-core desktop processor in 2005, pushing single processors to 64 cores and beyond.



GOLD AWARD

The Gold Award is given to the company deemed to be the very best of 2019. To stand out in a field of such spirited competition, in the ever-evolving cauldron of PC tech, requires a team that has focus, talent, fresh thinking and the ability to deliver. Winning is the mark of a team that has it all.

Taking home the Gold is an honour its winner can be especially proud of – and that's because it is you that decided this one. Voting has been running across our sites and we hope you had your say!

WINNER: Asus

Consistent quality, range and innovation across a huge variety of categories. Asus wants to be number one at everything it does, and its untiring efforts lead to great choice for consumers, and drives the industry forward.

ASUS

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Smite's 2019 Olympians attend the first annual summit at Hi-Rez Studios.

Council Culture

How Hi-Rez is tapping into its community for game insights.

In the summer of 2019 a group of Olympians assembled in Atlanta, Georgia, USA, to discuss development of the god-themed MOBA, Smite. The Olympians were players halfway through their year-long terms as council members, each there to represent player interests across Smite's multiple modes, platforms, and community niches.

The idea for using player councils originated with Smite's sibling game Paladins in the run-up to the 2018 Hi-Rez Expo event. The Paladins team were focusing on quality and community, explains brand director Alex Cantatore. Their thinking was, "It would be great to actually just get [the community] involved in the decision-making process and give them early looks at the things that we're doing and find out if this is something we should be doing."

There had also been a slight shift in the workforce. "We have some people on staff here that had worked for CCP for a long time," says Hi-Rez CEO Stew Chisam. "They had some insights into how valuable [player councils] could be." CCP's space MMORPG EVE Online has an elected Council of Stellar Management (CSM). The CSM works with devs to improve EVE which is what Chisam is referencing, although in EVE's specific case the CSM is also an occasional inflection point in massive digital interstellar warfare.

An example of community feedback in action at Hi-Rez is the Paladins champion Raum, a demon with a minigun. The team only started working on Raum because they were taking a break from a champion the player council hadn't warmed to at all. "We were excited about this champion concept," says Cantatore. "We were like, 'Man, this is going to be our best champion ever!'" After weeks of internal hype the dev team put the champion onscreen to show the player council and were met with… nothing. They didn't even hate it. "It was the worst, like, no reaction, you know?" says Cantatore.

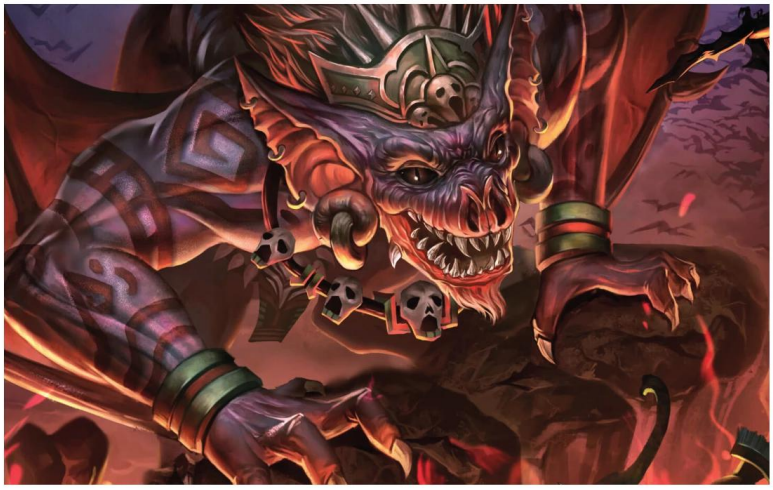
So the team stepped back from that character for a while and Raum was the result. Meanwhile, the unannounced champion has gone through multiple iterations and feedback cycles. "We showed them the most recent concept and they were … blown away. But it took lots of back and forth," says Cantatore. And even with the concept now in place there will be plenty more discussion as the council decides how she actually plays.

SMITE AND MAGIC

For Smite there isn't a big champion-level point of impact from the player

USEFUL FEEDBACK

With no shortage of ways players can voice their opinions about game development, being able to separate what's insightful or helpful from the digital noise is vital. Some devs prioritise what early adopters have to say via Kickstarter and Early Access programs, and there's the cocktail of subreddits, player data, customer complaints and more. Community ambassadors are yet another facet of that complex puzzle.



FAR LEFT: Council feedback helped buff Camazotz, *Smite*'s (underperforming) Deadly God Of Bats.

LEFT TOP: A chilly council response to another champ led to the creation of Raum.

LEFT BOTTOM: *Rogue Company* will also follow the player council format.

COMMUNITY MAGIC *How other games benefit from players getting involved with development.*

EVE ONLINE
The players who form the Council of Stellar Management assist and advise CCP on the game's development.

DOTA 2
Icefrog, the lead developer of *Dota 2*, is believed to contact pro players to get their opinions on game balance.

NIER: AUTOMATA
Players can also take development into their own hands – here a fan-made patch fixed issues with the PC port.

SUBNAUTICA
Unknown Worlds' Early Access success involved player access to the developer task board and more.

council. Instead the developers point to masses of smaller effects threaded through the whole process. AJ Walker, Smite's lead game designer, lists bug reports, feedback collection, detailed information on game issues, player behaviour concerns and more. "They help us on all sorts of things," he says, "And we can invert this whole process so I can share information with them for them to spread out into their different communities."

Smite's executive producer Travis Brown says that the council is particularly good at flagging up little quality-of-life issues which can make a big difference. "We're focused on big picture items, going for the future, and they'll just be like, 'Why doesn't this [small thing] work?'" Brown adds that if the team is choosing whether to implement a new feature or work on one suggested by the Olympians, "we should be prioritising the Olympian ones because they have more of the pulse of the players. They are the players".

The councils have dedicated spots for representatives on each game platform as well as wildcard spaces for whoever gets the most community votes. Smite's council is further subdivided, making sure there's one rep for the conquest modes and one for the other types of match on each platform.

"On the internet any game discussion forum is dominated by PC players," says Cantatore. "They're the ones at their keyboards on the internet all the time, and it's easier to stream if you're on a PC, or make YouTube videos." That can skew the feedback, so recruiting platform-specific player representatives means the dev teams can get console feedback and figure out how it relates to and differs from what's happening on PC. Something I'm pleased to see is that player councils seem to be part of how the company is getting better at seeking and handling feedback. As a studio (or, more recently, a set of studios), Hi-Rez is known for putting games out relatively early in development. That's useful for gauging interest early and adjusting development, but it also means a game can feel like it's getting dragged in too many directions by the early glut of feedback.

Hi-Rez waited two years to let the public play its upcoming third-person shooter Rogue Company. The game isn't finished by a long shot, but the core experience feels stable in a way that other recent Hi-Rez projects haven't. I suspect Rogue Company's stability will make a lot of feedback easier to parse. When a game has a clear identity in place, it's easier to tell if suggestions will help achieve that or conflict with it.

"We're a lot better at planning than we used to be," says Chisam of the changes to game production. "I think our processes have gotten mature enough to be able to take much better advantage of that [player council] feedback and I think that the communities have gotten mature enough as well."

I ask Rogue Company's lead designer, Scott Lussier whether they'll also take advantage of player councils, and he gives an enthusiastic yes. "They're really, really good community managers," he says, "They're operating on their own behalf but they're keeping the best interests of Hi-Rez in mind, also they're going to be very truthful. So yeah, I can't imagine we would go a different way." PC PHILIPPA WARR

Gen XX

Home Schooling.

Minimalism is more important than knowledge.

MEGHANN O'NEILL lives in a fairly small house. Her desk and computer are in the lounge room, which doesn't seem particularly conducive to effective learning. Perhaps she could put her family, and the dog, in suspended animation for a bit.

Going to university in The Sims 3 was weird. Time in the base neighbourhood stood still while you were there. Indeed, you were miraculously endowed with an entirely new Life Stage, during which to throw juice keg parties, hassle nerds and make street art, or whatever. You were also temporarily sterilised, presumably because it would be too confusing to give birth to a baby who appeared at home, with a live-in nanny and who would still be a newborn when you (eventually) returned. It's not like anyone ever got knocked up while studying, right?

While we're on weirdness, married students couldn't meet with their spouses but they could talk to them via phone, despite their implied state of suspended animation. Perhaps all of this was to depict a hyper-focus on study, yet the only study object I can remember is a skeleton upon which you could "bone up on anatomy", presumably because your husband wasn't having sex with you, while his ear was pressed infinitely to the phone. Luckily, the Sims 4's University Life attempts to abolish some of this weirdness. And yet, it's not without its own idiosyncrasies, either.

As the kind of player who likes a challenge, the first thing I did after enrolling at Britchester University was to get my Sim pregnant by a passing man. She was living at home due to the horrendously slow 'fastest' setting in the dorm (as a result of NPCs pranking each other all night) and the fact you can't cook, having to actually attend a buffet at specific times of day. I couldn't be less interested in twice-daily loading screens just to queue up to get free smashed avo on toast and no cooking skill points, to boot.

So, yes. She had a (part time) job flipping burgers, a different kind of bun in the oven and twelve courses to complete. That's classes to attend, presentations to perfect, papers to write, exams to cram for and (soon enough) a toddler to micromanage, too. I loved how difficult this was. It was a genuine struggle. Come Graduation Day, after her not-elongated Young Adult Life Stage was nearly exhausted, I was excited. What might the reward be for my hard work? Seriously? She became exactly as Happy (+2) as when she changed into clean clothes from the drier, earlier in the day.

Well, there's also a kickstart to a related career, significant skill development and a piece of paper to hang on the wall, but studying in The Sims 4 feels like a sacrifice. My Sim and her child could hardly afford any of the expensive, moodlet-granting paraphernalia my sims usually accrue, thanks to rapid career advancement; fancy toilets and fridges. Interestingly, I also purchased Tiny Living at the same time, in which you're given objects (both cheap and not) that combine beds, bookshelves, TVs and so on.

I once heard an allegory for having a baby that involved running at, and smashing through, a plate glass window. It is a one-way journey, involving pain, mess and a lengthy, expensive process to rebuild normalcy. I mean, I didn't experience that when I had babies, in real life. I love being a mum. It's probably more of an apt metaphor for Tiny Living, though. Prior to this expansion pack, my legacy families had massive, detailed houses, on stilts in the ocean, multi-story, and so on.

Can't I still spend all of those hard earned simoleons on basements full of souvenirs from Selvadorada, the Sims' jungle location? Oh, hell no. The best I'll be able to do, from this point onwards, is stack the most expensive washing machines on top of the most expensive toilets, possibly outside. Why? Tiny houses buff skills; when your floor plan is less than 64 tiles. In fact, I went to Carl's guide to check this and he's written, "Doubles skill gains on this lot. You read that correctly." Right? Right, Carl?

So my Sim and her child, despite the stress of uni, part time employment and the ridiculousness of the toilet constantly breaking, got smart fast. Even maxing the toddler's skills was a breeze, in a tiny house. Then, of course, she became a child with skill-boosting reward traits, then a teen with even more skill-boosting reward traits, then an adult who didn't need to go to university in the slightest, but who could breeze through university, while racing through an actual career, as I usually would.

Tiny Living's skill boost has broken the game, while also making a more realistic university expansion playable. Although I moved my entire neighbourhood into tiny houses immediately, there may be a point where this first graduating Sim can retire into an abandoned giant house. Haha. No. I'm joking, of course. She's busy raising her daughter's children thanks to maxing out parenting skill in, like, two days. The size of my Sim's house made her smarter than a uni degree. It's that kind of game. PC

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A collection aside

It has been a month of surprises for MEGHANN O'NEILL, who generally prides herself on knowing more indies than the average gamer. First, a RimWorld expansion suddenly appeared. Then she kept finding newly released games from studios with extensive and interesting back catalogues. There's a pleasant mix of artistic experiences, stories and more complex gameplay in this collection, too. Mojiken Studio, in particular, is experimenting within a range of genres. At the time of writing, Australia is battening down its hatches, due to COVID-19, so it might be a good time to play something new. We hope that all of our readers are able to stay safe and well, during this unusual time.

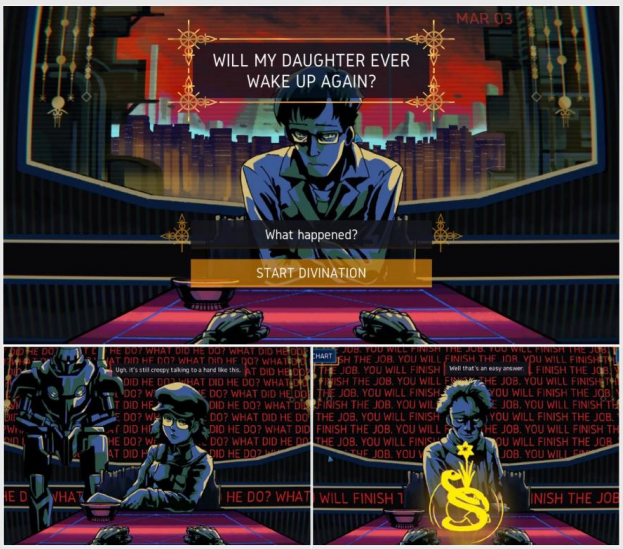
A SPACE FOR THE UNBOUND

DEVELOPER MOJIKEN STUDIO • **PRICE** TBA • **RELEASE** TBA
https://mojiken.itch.io/a-space

I played A Space for the Unbound without realising that it was a demo (it's just an opening chapter, about 20 minutes long), but I'm hooked. When I was a kid, my mum used to hide new toys in the hall cupboard, then she would magically produce them when I was bored, or stuck inside. This is a 'rainy day' game, for sure. In fact, the action opens with two friends creating a sad story together, in the boy's trailer, while sheltering from a steady drizzle. It has the kind of relaxed, wordy presentation I enjoy most when there's not much else to do.

In their story, the space princess is dying and wants to give her last miracle to her dearest friend, a cat. Too soon, it's over and our writers wonder what might come next. The girl is stuck for ideas but has a magic book that allows the boy to dive into her mind. Inside, he learns why she is creatively blocked and finds a new idea. The boy is then sent on a small quest to retrieve an item, through beautiful cityscapes. You're following the girl's cat and you can also pat every friendly feline you encounter. The art and animations are truly delightful.

The puzzles, to this point, are only of a 'Mixed-Up Mother Goose level' of difficulty, so you're finding objects and then bringing them to the correct location, but they are logical and enjoyable. I laughed when the boy found a key and said, "I wonder what this is for," and the locked door was literally right next to him. The demo ends on a cliffhanger about which I have a very bad feeling. If the outcome was foreshadowed by the opening story of the space princess, this could be a darker game than it initially appears. Either way, I'm in for the full experience.



DIVINATION

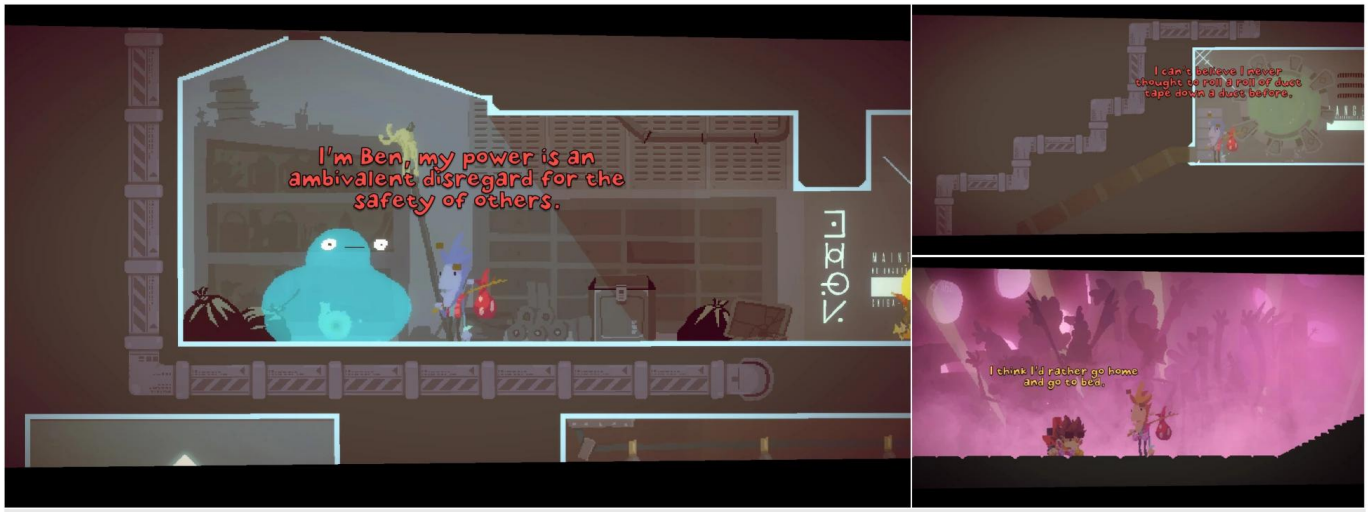
DEVELOPER MOJIKEN STUDIO • **PRICE** US$2 • **RELEASE** RELEASED
https://mojiken.itch.io/divination

I also didn't realise that A Space for the Unbound is being made by Mojiken Studio. I previewed their pretty adventure, She and The Light Bearer, two PAXs ago. On their website, I found another pre-release adventure, When the Past Was Around, which also looks great, and a prior collection of games that I've found myself playing this week.

Divination is quite fascinating. You play as robot hands who foresee the future for four people. This is a dystopian world inhabited by robots, humans and creatures in limbo. All are questioning their purpose and their existence.

The word 'suicide' is used (fequently) to decribe how The Mother, an AI, shut itself off. Various cults (human and robot) have formed, to follow suit. In many ways, this feels impersonal, mostly because casualties are simply listed as numbers. Of course, when a robot comes to ask you if it will ever find life meaningful, and you have to tell its future by arranging a sun, a rope and a fish in a cage, the pressure is on. Or is it? It's unclear how light interaction works, at least initially. At the end of (perhaps) ten minutes of play, you'll get a chaos score, then the game resets.

I played Divination multiple times. Perhaps there is more to your role than meets the eye. And yet, if you try to manipulate the future, you may find the fates offer a twist instead. An ending is possible, if not easy, or happy. There's an inbuilt way to track your paths through the game, which will assist in understanding how logic is organised. It's interesting that Mojiken Studio's collection is so diverse. Perhaps what ties these games together is that none of them are quite what I was expecting. I like that. And I like that they're poignant and not too pricey.


I'm Ben, my power is an ambivalent disregard for the safety of others.
I can't believe I never thought to roll a roll of duct tape down a duct before.
I think I'd rather go home and go to bed.

LAIR OF THE CLOCKWORK GOD

DEVELOPER J SIZE FIVE GAMES • **PRICE** $28.95 • **RELEASE** RELEASED
https://store.steampowered.com/app/1060600/Lair_of_the_Clockwork_God/

Lair of the Clockwork God's conceit is that it's half platformer, half adventure. It's also half hilarious and completely infuriating. It's very difficult to isolate the good bits from the terrible, because they're entirely enmeshed. As Ben (the adventurer) says, "You can press spacebar all you like. I won't give in to my baser urges." The fact that he refuses to jump, which is solved via complex puzzling, and walks unbelievably slowly, are the exasperating, yet somehow still funny, related gags. This experience shines because of its detailed commentary on game mechanics.

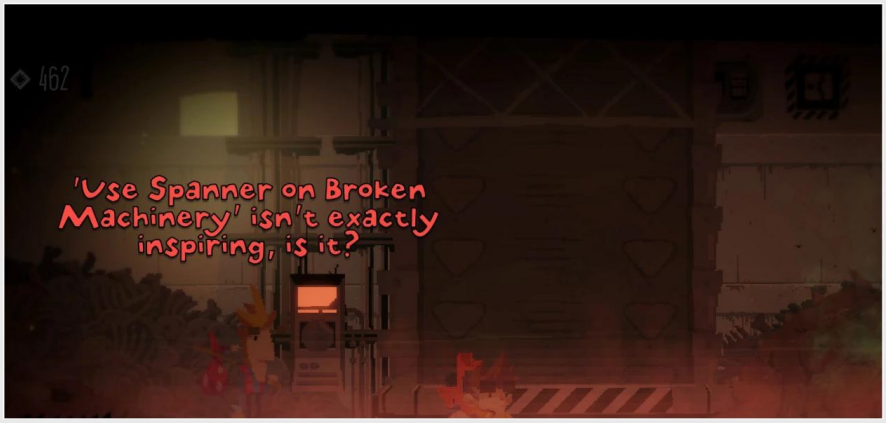
Probably the best example of how adventuring and platforming combine happens on an early level called, 'Joy.' In a nutshell, 'The Mechanic' (a screen with arms) is creating imaginative constructs through which to experience eleven, human emotions, for the purpose of understanding the many apocalypses affecting London. (Don't ask.) Dan (the platformer) joyously arrives at a colourful beer-based platforming level. Due to his inability to jump, Ben is immediately killed by a monster, discovering the amazing, bureaucratic process inside of The Respawning Zone.

Ben realises he would be able to respawn at the end of the platforming level (skipping everything difficult), if he could just do three things to convince the dinosaurs that he had died closer to its conclusion. And so, with a combination of duct tape, dialogue and cleverness, Ben meets Dan later (after you've also played as Dan through everything Ben avoided.) Later, you'll mistime a jump and Dan will die, respawn and cheerfully yell something like, "Thanks, dinosaurs!" I found myself grudgingly forgiving even the most unfair of levels thanks to this humour.

Probably the worst (but also the most brilliant) puzzle in the game is extremely meta. I won't spoil it for you, but if you can solve this one without getting a hint, I commend you. As with the adventure genre's most hated meta puzzles, it makes complete sense after you've completed it and literally none beforehand. This is also the level with a public "Wanking Booth" which is as dismaying as it sounds, especially as it grants Dan a special ability (which is probably not whatever you're imagining, but is terrible enough, if you can't forget how he got it.)

And just when you're thinking that the narrative couldn't get any less intelligible, things get sad (sort of) when a character dies, and some of the mismatched threads of story tie back together. There's also an overarching commentary about friendship and appreciating the special things other people can do for each other. And lots more annoying "bloke humour". Somehow, despite its aggravating qualities, I never stopped enjoying the game. Even the tutorial, which I found incredibly frustrating, initially, was endearing when it returned, towards the end.

So yes, Ben and Dan is a series. Apparently, I already own it, but I can't recall playing the previous games. By the looks of them, they're adventures. Does this adventure/platformer hybrid in Lair of the Clockwork God actually work? I kept forgetting that Ben could pick up items, for starters. And it had that modular feel of The Cave, by Double Fine, probably because it wouldn't be fun to constantly replay sections of platforming levels to bring items back to known areas. The humour and insight carries it. I likely missed some in-jokes. Please don't tell me what they were.



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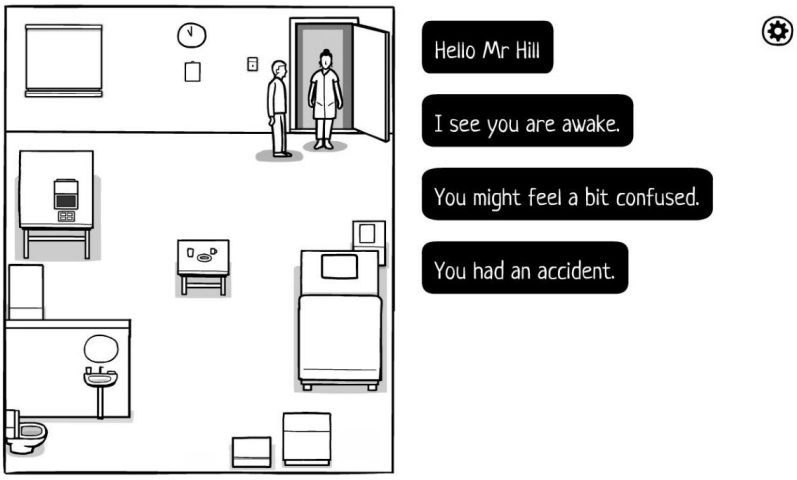
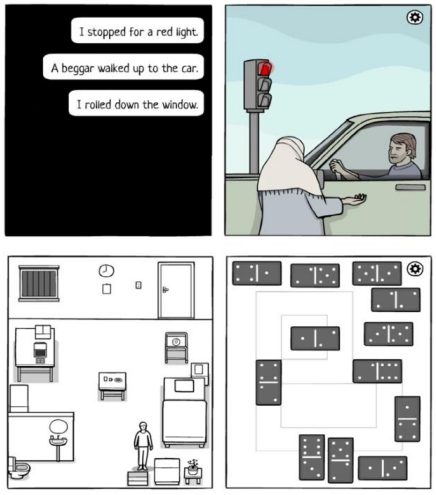




THE WHITE DOOR

DEVELOPER RUSTY LAKE • **PRICE** $6 • **RELEASE** RELEASED
http://www.rustylake.com/adventure-games/the-white-door.html

Once again, I played The White Door with a distinct lack of prior knowledge. Rusty Lake is both the name of the game's developers and the surreal world they are creating via a wonderful collection of puzzle-adventures. I now have their bundle. But, last things first. The White Door is their most recent release and I had no idea these characters and events were so deep until I started playing the rest, later. As a standalone game, The White Door is (kinda) a love story, (kinda) an exploration of (possibly) psychosis and definitely a puzzle game.

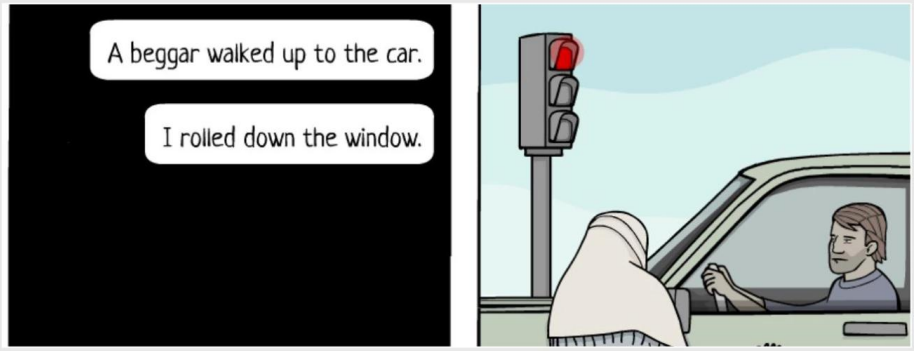
Mechanically, it opens like Florence, by Mountains Games. You're tapping to consume bite-sized donut chunks and pulling a toothbrush back and forth across your teeth. You're also confined to a white room, following a daily schedule of tasks; breakfast, self-care, memory tests and so on. A health worker asks your age, which you can figure out from a calendar and the date of birth on your file. It's disorienting to not know basic details of your life and to have to observe your surroundings to figure them out. The character's name is Hill.

Delightfully, you play through a collection of dream sequences (framed as memories) which are told in retrospect. So Hill says, "I took a sip," and that's your cue to drag a Bloody Mary to your character's lips. Later, he's sad, and you're literally pulling tears from his eyes. I found interacting in this way made Hill very sympathetic. If you're sensitive to suicide, however, there is a moment where you'll have to participate in a version of this. It's a (relatively) small part of the game, but you may wish to give the entire experience a miss. There's no way to avoid it.

After a couple of days in the white room, things start to get weird. If this is a health facility, why are they feeding Hill donuts? Soon, you're given a clue which reveals a myriad of other clues that had been hiding in plain sight. Incredibly, after the ending, you can unlock achievements which allow you to play as another (hardly ever seen) character. What they did in the white room changed my entire understanding of what the game was about. This wasn't finished. I wanted to know more. And so, I started at the beginning, with the Cube Escape series.

These short (and plentiful) experiences are like escape room/adventure game hybrids, immediately thematically linked to The White Door. There's birdseed, music notes, dominoes, moths, and all of the things that had been so (recently) meaningful to me. The episode called "Case 23" blew my mind, because the dress a woman was wearing had the same pattern as (something very important) at the end of The White Door. And the Russian Doll, wow. You don't know what I'm talking about. I'm not entirely sure I do. It's an incredibly intricate narrative.

In fact, I'm amazed by how this massive series is so internally coherent. Each is its own game, yet links to many others. One is set in a hotel. Others are earlier (and earlier) prequels. You often have to figure out who the player character is, too. I haven't finished all of these, as yet. (There is an exorbitant amount of content for $20.) But The White Door functions beautifully as either your first game or your last. I'm glad I played it first because, although the art and puzzles are highly engaging, it was caring about Hill that prompted me to learn more.



> If this is a health facility, why are they feeding Hill donuts?

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RIMWORLD: ROYALTY

DEVELOPER LUDEON STUDIOS • **PRICE** $28.95 • **RELEASE** RELEASED
https://store.steampowered.com/app/1149640/RimWorld__Royalty/

Is there anything more delightful than an expansion pack? Especially for a game you love? Especially when you haven't played it for a while? Especially when it slots seamlessly into existing content so you can experience the whole thing all over again? Yes, there is. When the expansion is a surprise! I've played a lot of RimWorld. I've won on an ice sheet on 'rough'. I've eaten many tens of raiders. I've explored all manner of emergent stories, even moving a married couple of miners to a nearby hex with two cows "on their honeymoon". Suddenly, there's more.

I started a new game, with Royalty enabled. The first new thing that happened was when a noblewoman fled into my colony. She was being chased by a snow hare. She had been out for a walk, to meet a secret suitor, or something. I can't remember. I was too busy laughing as I popped a single bullet into the hare's head. I escorted her to the makeshift bunker we'd hastily erected after surviving our crash landing. She wanted milk and insect jelly. We picked her some wildberries instead. Then she left, on a snooty shuttle, sent by her loyal subjects.

Subtle changes to user interface support this glut of new quests. As quests arise, you're given time to decide whether to pursue them (on a new tab), rather than having to accept or decline immediately. I had a moment to judge whether I could take down this enraged hare before committing. Does this make the game less exciting? Well, another refugee, Daniel, also radioed ahead, but refused to disclose his situation. Three days later, we were neck deep in spiders. (He'd been stealing jelly and gotten himself covered in pheromones.)

So, no. It's still nuts.

Quests definitely result in more coming and going, too. At one point, I sent two workers (a drug addicted, less useful pair) to help build a hospital in a pirate village. They were away for ten days. I have no idea why. My colony knocked up it's first, three-bed hospital in an afternoon, along with a monument requested by some local toffs. There are also (generally) more visitors, both welcome and otherwise. Allies wanted me to attract a cluster of mechs (and their weather jamming device) away from them, sending a group of six elite troops to stay, as backup.

Marked as only two stars of difficulty, I accepted, quickly whipping up barracks and an extra kitchen. Although the mechs weren't immediately aggressive, their encampment assembled one Scyther every day. There were drop beacons which would summon three mechs each, as soon as anything was disturbed. Shields prevented structures from taking damage, except from close range. I cleared the camp over several hours of play, largely thanks to some passing boomrats. The allies bestowed royal favour onto one of my pawns. He's now demanding a throne room.

I'm going to leave RimWorld halfway through my current game, for now. As I write this, COVID-19 has locked us down (and there's been a lot of preparation for my teaching work, so things have been busy). If RimWorld has taught me anything, however, it's that people should not be expendable (especially visitors, if all of their high tech gear is acidified when they die). Also, that you should stay inside during toxic fallout and build hospitals early.

Stay well, play RimWorld Royalty and I'll report back on how things ended up for this game, in the next issue. PC

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worldofwarcraft.com

World of Warcraft: Shadowlands

WoW's game director reveals what awaits us in the afterlife.

Few places in Azeroth aren't covered in the boot prints of World of Warcraft players. We've been to every major continent, alternate magical dimensions and through dark portals to sundered worlds. Hell, we've even been to space. But this summer, Blizzard is taking us to a realm no living soul has been before: the afterlife.

Called the Shadowlands, these kingdoms of death are a typically well-oiled machine where dead souls are sorted and sent to different realms based upon their deeds in life – or it would be if some nefarious villain hadn't broken the cycle, forcing every new soul to be dumped straight into a hellish abyss. "The Shadowlands pose a threat to our existence, to life, and what life means," game director Ion Hazzikostas tells me. "That will lead us to have to venture across this barrier into the Shadowlands, but this is not the familiar Warcraft ecology of orcs and trolls and humans and dwarves. This is a fantastical journey into a side of Azeroth we've never seen before."

When Shadowlands releases later this summer, however, it won't just be another expansion full of monsters to kill and gear to grind. It also brings some exciting new innovations to the 15-year-old MMO, like a roguelike dungeon that changes each time you enter, an enormous amount of customisation and player choice, and a reduced level cap that will make starting a new character a lot less daunting.

DEATH BECOMES US

You're right to be more than a little skeptical about Shadowlands if you spent a significant amount of time playing World of Warcraft's current expansion, Battle for Azeroth. It's no secret that Blizzard missed the mark on many of its core features, making for one of the most contentious two years of World of Warcraft's entire life. But in talking with Hazzikostas, it's clear that the release of Shadowlands isn't Blizzard sweeping Battle for Azeroth under a dirty rug. Many of the expansion's ideas feel like a direct response to player feedback and Blizzard's own internal learning.

For example, both Legion and Battle for Azeroth let players choose which zones they wanted to level through. It was great that players had a choice and could take alternate routes when levelling other characters, but it also made telling a coherent overarching story a real challenge. Shadowlands is the best of both worlds: players' first time through will lead them from zone to zone in a set path, but once they've beaten the main story they're free to tackle zones in any order on their other characters. "We can tell a more structured story like we did back in Warlords of Draenor, where you are meeting new allies, experiencing betrayals along the way, and uncovering plots in a way that we simply weren't able to do in Legion or Battle for Azeroth when we didn't know what zone you're going to start in," Hazzikostas says. "If you start in the zone that has the big betrayal in it, then it's not much of a betrayal."

As players explore the Shadowlands, uncovering its mysteries and helping its denizens, it should feel a lot more like the Warcraft of old. Dangerous, high-level monsters will prowl just off the beaten path, forcing players to again be cautious of where they're exploring. "We've heard a lot of feedback and we

agree that there's a risk of the journey through a new world feeling a bit flat when everything scales around with you as it must if we're going to let you pick any zone," Hazzikostas explains. "We are excited to get back to a place where when you first arrive in Bastion, the outer reaches of the zone have some high-level enemies that are pretty tough for you."

That's not the only way feedback from Battle for Azeroth and Legion have shaped Shadowlands, though. Throughout the expansion, players will gather Anima to buff up their character in the same way that players hoarded Artifact Power in both Legion and Battle for Azeroth. But unlike Artifact Power, Anima isn't infinitely grindable, and players won't have to worry about feeling pressured to spend hours of each week maxing it out just to stay competitive with others. "That just leads to burnout," Hazzikostas says. "In order to get your core power progression, really we're probably asking like an hour a week – something like that. Obviously it depends on your activity level, but we really want to create a baseline low level of activity."

But if players aren't spending all their free time grinding for marginal increases in power, what will they be doing instead? Turns out, Shadowlands has some bold ideas for reshaping Warcraft's endgame.

INTO THE ABYSS

In addition to the usual raids, dungeons, and daily world quests that players are used to by now, Shadowlands is packing a big one-two punch between a new roguelike dungeon called Torghast, Tower of the Damned and a harrowing outdoor zone for max-level players, The Maw. Each iterate on experimental ideas from Battle for Azeroth, Hazzikostas tells me.

The halls of Torghast are what I'm most excited for. Once players reach max level, they'll explore this new type of dungeon looking for relics that can then be used to craft new Legendary items with powerful and unique abilities. Getting out alive will be challenging, though, because Torghast changes each time you enter it. Hazzikostas says that, like any good roguelike, each floor will algorithmically spawn different monsters and traps, and powers to help you survive them. During a run you'll gradually choose various temporary upgrades that'll augment your abilities, often triggering weird and unforeseen synergies.

"It gives us a chance to have a lot of fun doubling down on just, frankly, broken powers," Hazzikostas laughs. "Things that are transformative that we can't necessarily do in the existing, established spaces like dungeons and raids. But if you can feel like you're breaking the game in the confines of a run in Torghast, that's a whole entire new type of gameplay that we've never really been able to explore."

Compared to the confines of Torghast, The Maw might seem like a breath of fresh air if it weren't swimming with the Shadowlands' scariest monsters. Previous expansions have included a zone exclusive to max-level players, but Hazzikostas says The Maw will feel significantly different. "This is the heart of the Shadowlands that none but you have ever been able to escape from," he warns. "This is not a place where you're going to go chill out for a while, pick some herbs and go do some quests. But we still want this to be a place for all players."

Hazzikostas compares The Maw to how zones were designed in World of Warcraft Classic, where players weren't the super-powered gods they are now and had to exercise caution while fighting and exploring. If Blizzard pulls it off, it should add some much-needed tension to Warcraft's open-world questing.

WELCOME TO HELL

Torghast and The Maw are just a few of Shadowlands' promising new features, though. Each new zone has its own Covenant that players can choose to join, unlocking unique abilities and armour sets. And even though players will spend most of their time exploring this new spirit realm, those not currently at max level will see some radical new changes to Azeroth.

For the first time ever, World of Warcraft's level cap is being reduced back to its original limit of 60. Instead of new abilities being slowly drip-fed over 120 levels, the level squish will ensure each new level is satisfying and exciting. It will also make it easier to experience old expansions in their entirety. Once a character reaches level 10, players will choose which expansion they'll want to experience, taking them all the way to level 50 where Shadowlands begins. It sounds like an exciting new way to experience parts of Azeroth that often go neglected these days, but at a pace Hazzikostas estimates is 60 per cent faster than the current levelling process.

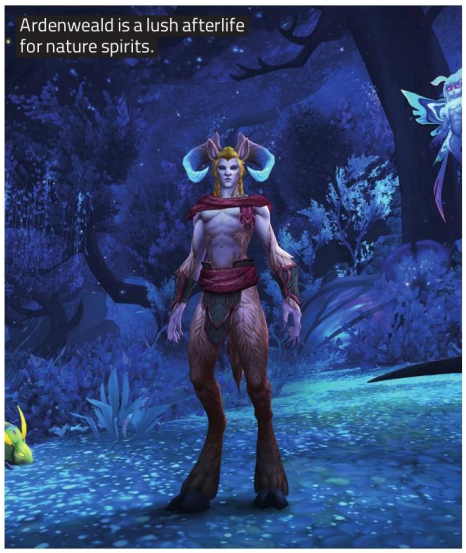
And while Battle for Azeroth's unique ideas didn't always stick, Shadowlands is improving many of them in ways that make me excited about spending the next two years in Warcraft's version of hell.

PC STEVEN MESSNER

Maldraxxus is where Slayer fans go when they die.

Bastion is a kind of paradise for virtuous souls.

Ah, a giant spider.
So this is hell, then?


Ardenweald is a lush afterlife
for nature spirits.

ASUS Presents WiFi 6

HOW THE NEW GOLD STANDARD IN WI-FI CAN IMPROVE YOUR HOME NETWORK.

One thing we're going to take away from a difficult 2020 is the importance of good Wi-Fi within our homes. With so many people around the world now working from home offices, a strong, stable, hardy connection is important. If you want to set up the ultimate work-from-home environment, or even build a co-working space (once it's appropriate to do so), you need to make sure that your connection isn't just fast, but built to handle heavy usage across multiple devices.

That's where ASUS and WiFi 6 (802.11ax) come in. With an Asus WiFi 6 router you can experience the lowest latency, the fastest downloads, and wireless that will handle whatever you throw at it. WiFi 6 is built with businesses in mind, so that people working in dense environments can support their clients better and maintain a stable connection across multiple devices – it's perfect for those who are now working from home alongside their families and housemates, and offers speed boosts of up to 35%.

Here's a complete explainer on what it is, how it works, and which routers you'll need to tap into it.

THE NEED FOR SPEED

The first major benefit of WiFi 6 is its much faster response times, and how well it handles a device-heavy environment. Multiple connected users usually puts a strain on your connection, but thanks to a feature called orthogonal frequency-division multiple access (OFDMA), you'll be able to enjoy a much smoother experience. OFDMA divides each channel into smaller sub-channels, which lowers congestion and allows the router to manage multiple devices with ease. Multiple devices are bundled together and can transmit simultaneously, which means lower latency and a smoother experience – perfect for when you need the best connection possible.

If you find that you're hitting a bottleneck sending multiple huge files to several clients at once from your home office, WiFi 6 can help. With an appropriate router, you'll be able to transfer more data at once to a huge number of devices with ease. Thanks to UL/DL MU-MIMO (Upload / Download Multi-User Multiple Input / Multiple

"With an ASUS WiFi 6 router you can experience the lowest latency, the fastest downloads, and wireless that will handle whatever you throw at it. WiFi 6 is built with businesses in mind."

Asus's RT-AX56U (right) and RT-AX3000 (left) offer a range of features to boost network performance.

The RT-AX3000 (left) and RT-AX11000 are packed with additional game accelerators that will bring your online gaming experience to the next level.

Output) you can tap into multiple concurrent 2x2 connections for the best performance possible. Even if you don't have 4x4 client devices, Routers such as the Asus RT-AX88U will still let you benefit from the equivalent architecture.

This is just the tip of the iceberg for the benefits of WiFi 6, though. You can expect faster throughput with doubled bandwidth, along with a 25% higher data rate, with an improved performance in a congested environment thanks to BSS Coloring. If these terms go over your head, don't worry – the main takeaway is that you'll see much smoother communication between your devices and your connection, which is especially important if you live in an apartment complex or in any other environment with a lot of devices and wireless signals.

SERVICE AND SECURITY

The advantages of an Asus WiFi 6 network connection aren't just in speed and connectivity. You'll also notice, with WiFi 6, that your mobile devices have better battery life. Because the router is able to designate intervals for when devices are transmitting data, they can "sleep" when they're not waiting for a router signal, which will mean that they're able to stay powered for longer. This essentially helps to reduce the charge-cycle needed, which extends the life of your mobile devices. There are also enhanced security measures available on a WiFi 6 set-up, thanks to Simultaneous Authentication of Equals (SAE). This form of authentication is built to fend off the worst of attacks (like dictionary attacks that target passwords), and will make your devices much more secure when they're connected to the network.

WiFi 6 is the closest you can get to a seamless roaming experience within your Wi-Fi network, as the Agile Multiband is able to balance bandwidth over loading. It makes sure that clients are routed to uncrowded bands and reduces switching time between APs – pair it with an Asus AiMesh system and you'll have the best wireless Internet possible. You can connect RJ45 devices to a WiFi6 AiMesh mode to immediately receive a connection that you'd usually need a full cable set-up for – it's amazing what's possible with WiFi 6.

If you're ready to embrace the future of wireless internet and build the best home office imaginable, check out ASUS' full WiFi 6 range in the table below.

Asus' RT-AX92U 2 pack is a great way to extend your network, while the ZenWiFi pair offers even faster performance with auto-synchronisation.

"The advantages of an ASUS WiFi 6 network connection aren't just in speed and connectivity. You'll also notice, with WiFi 6, that your mobile devices have better battery life."

MODEL NAME	WIFI SPEC	DEVICE BAND	STREAMS	OFDMA	UL/DL MU-MIMO	1024QAM	BSS COLORING	TWT	WPA3	WI-FI AGILE MULTIBAND	AIMESH COMPLIANT
ZENWIFI XT8 (2pACK)	AX6600	5GHz-2: 4804Mbps 5GHz-1: 1201Mbps 2.4GHz: 574Mbps	4x4+2x2+2x2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RT-AX92U (2PACK)	AX6100 (Hybrid)	5GHz-2: 4804Mbps 5GHz-1: 866Mbps 2.4GHz: 400Mbps	4x4+2x2+2x2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GT-AX11000	AX11000	5GHz-2: 4804Mbps 5GHz-1: 4804Mbps 2.4GHz: 1148Mbps	4x4+4x4+4x4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RT-AX88U	AX6000	5GHz: 4804Mbps 2.4GHz: 1148Mbps	4x4+4x4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RT-AX3000	AX3000	5GHz: 2402Mbps 2.4GHz: 574Mbps	2x2+2x2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RT-AX56U	AX1800	5GHz: 1201Mbps 2.4GHz: 574Mbps	2x2+2x2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

GET THE PARTY STARTED

Our first look at BALDUR'S GATE III's opening act.

By Fraser Brown

"Jesus Christ," mutters Larian CEO Swen Vincke as another arrow hits his unconscious wizard. We've barely started our journey to Baldur's Gate and we're close to a second party wipe. Vincke gets creative. He takes off his boot and throws it at a bandit, dealing a very small amount of damage. Five minutes later, unrelated to his missing footwear, he slips on some stairs and dies.

Baldur's Gate III promises an epic yarn full of cosmic invaders, trap-filled dungeons and more characters with a mysterious past than an Agatha Christie mystery. And just like its tabletop progenitor, a few unlucky rolls and some interesting decisions can transform it into a brilliant comedy of errors.

Details were slim last time we spoke to Larian about its next big RPG, but this time the developer has opened the gate – though lamentably not to the point where I've been able to take it for a spin myself. The illithids, grotesque alien tyrants more commonly known as mind flayers, have rediscovered the secret of flying nautiloids, their weird crustacean ships, and have decided to invade the Forgotten Realms. They've abducted lots of people and stuck parasitic tadpoles in their heads, but before the show can really get started another alien race appears, the githyanki, on top of red dragons no less, and blows them out of the sky.

This is good news, as it turns out. As one of the unfortunate abductees, you're now free. Unfortunately, you still have a parasite in your head. It's not a great thing to have stuck inside your noggin, as it's how mind flayers procreate.

"So I have a central problem," Vincke says. "I need to get rid of this tadpole or I'm going to become a mind flayer. So I'm looking for somebody that can help me with that, and that too turns out to be quite a problem, but I can go in many directions."

ORIGIN STORY

Between the extremely flashy cinematics, you'll make your character. Here you've got to decide what race you are and what your background is, and then pick a class. All custom characters hail from Baldur's Gate, but you might be a dwarven noble or a crooked drow. Chances are you'll make an origin character. Yes, Divinity: Original Sin II's origin system is returning, letting you pick named characters with more elaborate backstories, special hooks, and unique dialogue options. Vincke chooses Astarion, a vampire spawn who now finds himself free from his master and able to walk in the light – a 'gift' from the tadpole. This time, they're also locked into a class.

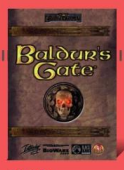
"The stories are very much tied to class at times," says senior writer Adam Smith. "Class is such a part of identity in D&D, in a way that it wasn't in DOS II." But those initial decisions will eventually be overshadowed by the choices you make as you play. "A rogue is always going to be able to do certain things that other people can't do, and an elf is going to be reacted to by some characters in a certain way. There will always be things that are specific to you because of the person you are, but the really interesting things are the things that are specific to you because of what you did. And then what gets even more interesting is how your companions remember the things that you did, and the way that you treated them and other people. And that becomes very complicated."

At camp, Vincke starts feeding on one of his companions. He's made a few friends, including one of the aforementioned githyanki, Lae'zel, all of whom can also be chosen as an origin character at the start of the game. They're as complex as the player character, and in the case of the

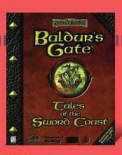
BELOW: I failed my history roll, so all I know is that they're statues.

CONFLICT IN BALDUR'S GATE III STEMS FROM CONVERSATIONS JUST AS MUCH AS COMBAT

GATED COMMUNITY *A timeline of* Baldur's Gate *games and expansions*



1998 Baldur's Gate



1999 Baldur's Gate: Tales of the Sword Coast

2000 Baldur's Gate II: Shadows of Amn

2001 Baldur's Gate II: Throne of Bhaal

2001 Baldur's Gate: Dark Alliance

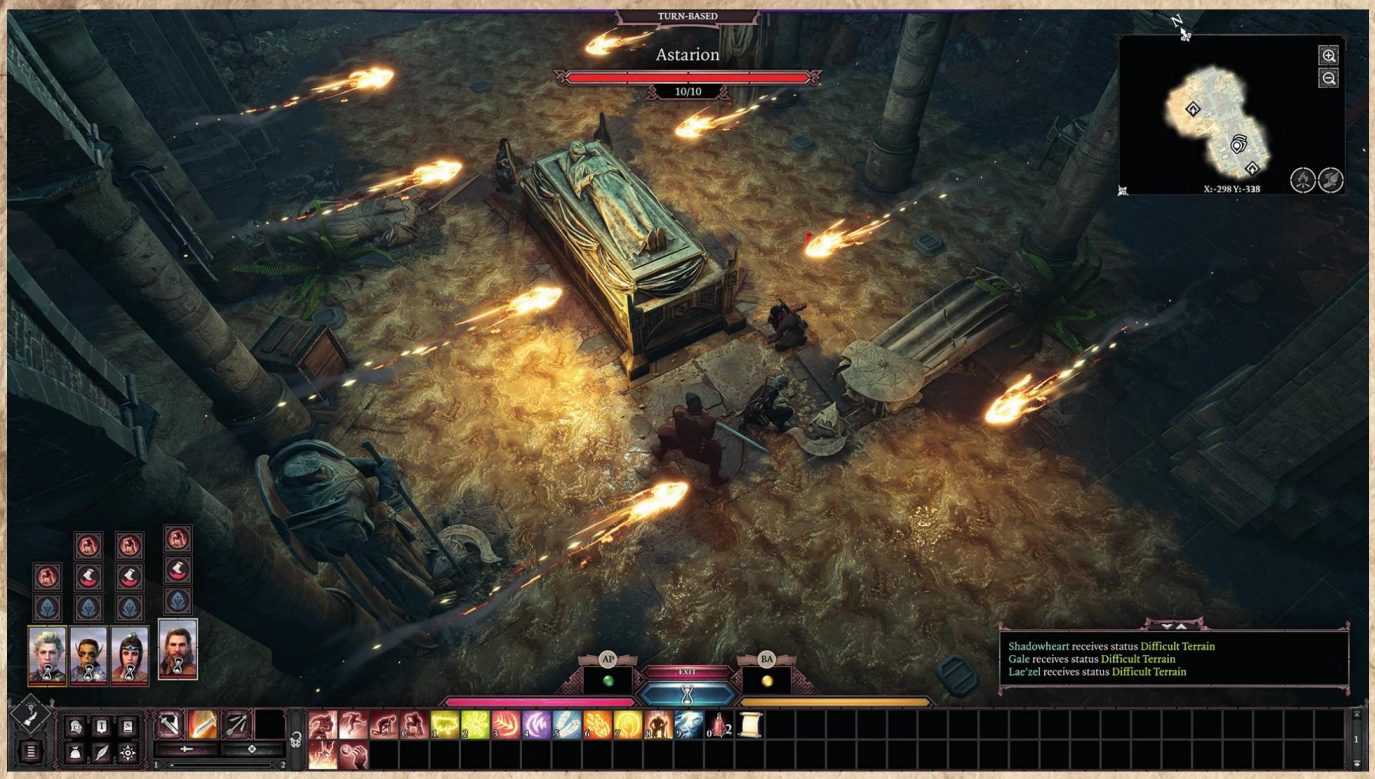
2004 Baldur's Gate: Dark Alliance II

2012 Baldur's Gate: Enhanced Edition

2013 Baldur's Gate II: Enhanced Edition

2016 Baldur's Gate: Siege of Dragonspear

TBD Baldur's Gate III



multiplayer mode they are all player characters, the heroes or villains of their own story – but for the time being the half-elf cleric known as Shadowheart is a light evening snack. As Vincke drinks, he's able to give into his craving, or he can pull back before sucking her dry, leading to a D20 being rolled at the centre of the screen. Luckily he passes the roll, as failure would have ended Shadowheart's story prematurely. Even with the roll, however, he's not out of the woods. The party could discover his secret, which seems pretty plausible given that tadpoles give their victims a psychic connection.

He likens the parasite to the Bhaalspawn legacy from the earlier games. It's a power that can be tapped, but it comes from a dangerous source. "Every single time that you use it, you give into it," Vincke warns. "And as you give into it, things start happening when you encounter other people with tadpoles, and you might not be so resistant. Eventually you'll find mind flayers, and if you use the tadpole, you might find that it's really hard."

Conflict in Baldur's Gate III stems from conversations just as much as combat. The game is constantly making skill rolls and dialogue checks, pitting your arcane knowledge or religious know-how against the whims of the dice. During one chat, Vincke tries to pilfer a toe ring from a goblin, which he's able to do by gingerly kissing the gobbo's feet while employing some sleight of hand. Thanks to the close-up conversations and mo-capped animation, you can get a real good look at the makeout session, made even steamier by the detailed description. Vincke leaves the encounter with some new jewellery, while the goblin leaves with a smile.

TOP: Yep, Larian still really loves fire.

ABOVE: This place isn't welcoming, but it's handy for making fire arrows.

TURN IT UP

Fights are bound to happen, of course, and unlike the earlier games, Baldur's Gate III's brawls are all turn-based. Exploration happens in real-time, and players or characters not in the brawl can continue to move normally, but when the swords are unsheathed things get tactical.

"I'm critical of real-time-with-pause because I think that it looks messy. It's like a miss, pause, give three orders, a miss, pause," says senior designer Edouard Imbert. "Also, I don't believe that sticking to the old system can expand to a greater audience. The thing with turn-based logic is that everybody understands it. It's my turn, it's your turn. And we have this experience with it – it worked for us with Divinity: Original Sin, it worked for us with Divinity: Original Sin II, and D&D is turn-based.

"Your characters are the tools you'll use to solve a puzzle, and the puzzle is more messy if everything is moving at the same time."

To tackle one of the criticisms of the turn-based model – that it's slow or laborious – Larian's made some tweaks. Instead of characters going in order and

THERE ARE LOTS OF WAYS TO PREPARE FOR A BATTLE TO GIVE YOU AN ADVANTAGE

getting an attack or an action, you can swap between them, using attacks and bonus actions to create a combo. Your party effectively moves simultaneously. If you love the turn-based combat so much you want it on even when you're out of battle, however, you can force turn-based mode. This should make it easier to sneak, since you can more accurately manage your party's movements.

All of the spells, abilities, and values are as they would be in a regular game of D&D, but just as important are all the open-ended roleplaying and combat opportunities. D&D is largely fuelled by imagination, and while Baldur's Gate III has to impose a few more limits (sorry, no Wish spell), it still promises to be more interactive and experimental – and just as free to exploit and abuse – than the already liberating Divinity: Original Sin II.

In one fight, Vincke places some crates to give him more elevation and a combat advantage, and he could have alternatively used them to create a barricade. Before another, he sneaks around removing weapons from suspicious-looking skeletons, so when the trap is sprung, they have to use their fists. The plan is to eventually make the AI find a new weapon, comparing their values to find the most effective one, but they'd still have to spend precious time looking around. In a pinch, you can fling some of your inventory at your foes, just like Vincke did with his boot. That means Larian needs to figure out how much damage, along with what kind of damage, all these objects do. Then there are the environmental factors, like elemental surface effects, loose boulders, or floors that can be destroyed, splitting the battle across multiple levels.

TOP: Calamari is back on the menu.

ABOVE: You probably don't want to end up becoming a mind flayer. Bit... gross.

HIGH GROUND

Original Sin II had elevated areas, but the fights really took place on an invisible 2D grid. In Baldur's Gate III, it's fully 3D. This means you could have your ranger hanging out in the rafters, your rogue finding an alternate route below the ground, and your fighter rushing in with their massive sword swinging. There are lots of ways to prepare for a battle to give you an advantage, but some of them will just be there to make you feel like a total badass.

"We don't want all the fights to be complicated," says Imbert. "Some of the fights have to be easy, like three goblins standing next to an explosive barrel. So we have this concept of popcorn fights, which are designed to make you feel good about yourself."

With more complex level design comes a more flexible camera. The isometric view is helpful in combat, but as you're wandering around, you might fancy zooming in and playing it more like a third-person affair, watching your character's rear and, for the first time, admiring skyboxes and distant vistas.

Aesthetically, it's not that far

STARSTRUCK *The D&D cameos we'd like to see*

ANYONE BUT DRIZZT

I like Drizzt. Everyone likes Drizzt. He's the best. That's a problem for all the adventurers who aren't legendary drow heroes. I don't want a much more impressive hero showing me up in front of my mates.

ELMINSTER

You can't have Volo and not include his best frenemy. Elminster is the archetypical wise wizard and would know a thing or two about mind flayers.

VOLO

The scholar will be making lots of appearances. He's an inquisitive bloke with a fantasist streak that inspires him to take a few liberties with the truth.

BOO (AND MINSC)

Nothing gives a boost like a miniature giant space hamster. Boo and Minsc are *Baldur's Gate* staples, so their absence would be greatly missed.

removed from Original Sin II, but character models, animation, magical effects, lighting – they've all clearly benefited from a bigger budget and more designers. And when you get up close, the difference between the two games becomes very apparent.

While mind flayers and tadpoles loom over this early part of Baldur's Gate III, there's also the threat of monsters and traditionally 'evil' races teaming up. "Suddenly, all of these forces, the goblins, the drow, gnolls and all kinds of different evil are gathering together and working together," says Smith.

"The Sword Coast is a dangerous place, but one of the things that makes it a place of opportunity rather than a place of incredible danger is the fact that these guys don't work together normally. Right now they are, and they have a new god, the Absolute. It's uniting them, and it's saying 'You are the future, the world is going to be yours.'"

TOP: Any origin character you don't play can be recruited as a companion.

ABOVE: Characters can jump, climb and hang out in the rafters.

BELOW: Meeting the tadpole for the first time is a bit harrowing.

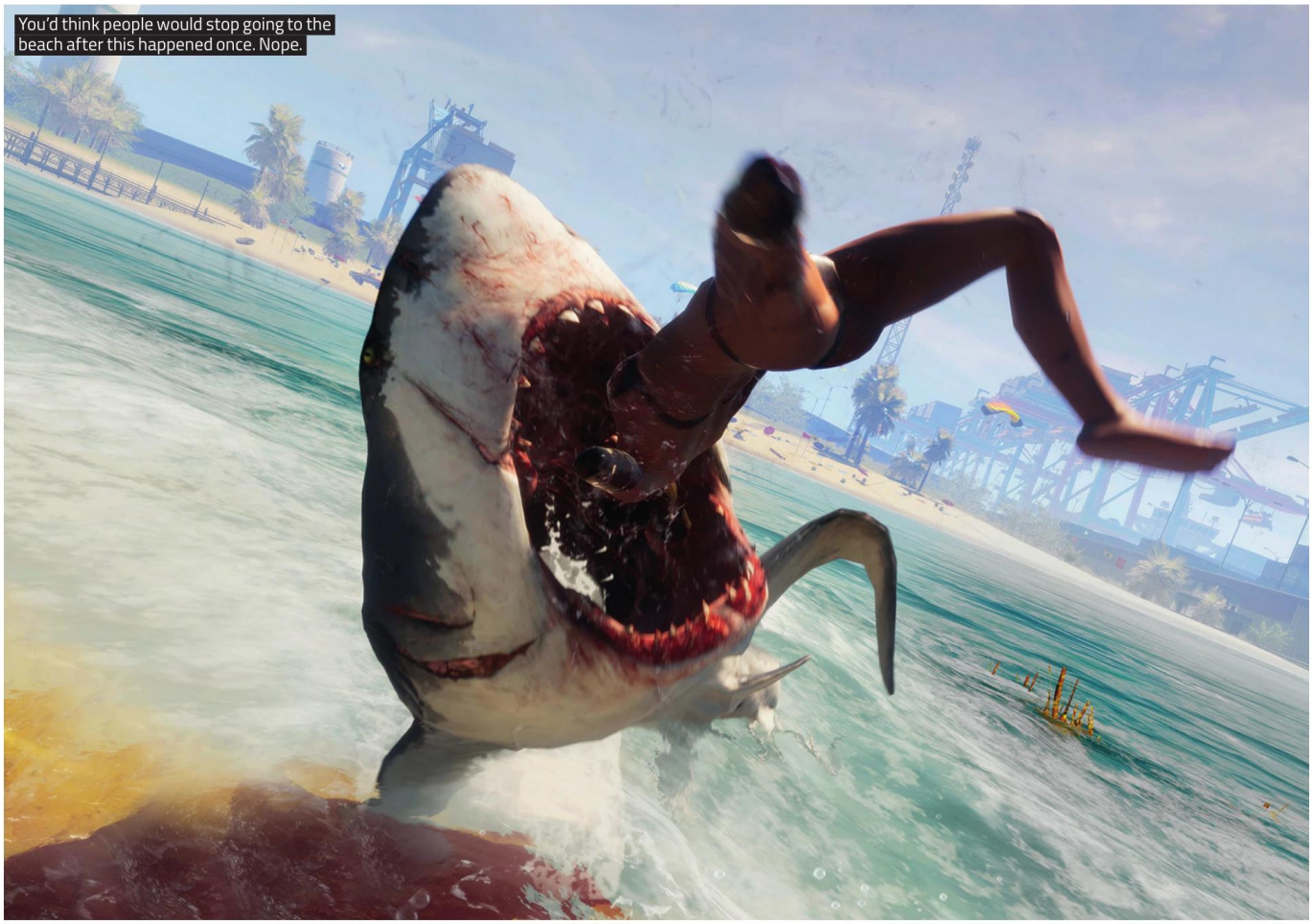
OUT OF ALIGNMENT

There's likely a bit more to this coalition of villains than meets the eye, particularly because Wizards of the Coast asked Larian not to get too hung up on the traditional alignment system, which the tabletop game also leans on less these days. This matters for your character, too. You can be good, evil, lawful and chaotic, but that's purely up to you, not an arbitrary alignment you pick at character creation.

The slimy cosmic monsters, on the other hand, seem more like cut and dry bastards. Meeting a mind flayer probably means you're about to become dinner or a host. Even dying, they're a menace. After the nautiloid crash, you can find the mind flayer who infected you, and just like the tadpole, he will try to make you give into him. If you have some unlucky rolls or give in, he'll suck your brain out of your skull, which won't bode well for the rest of the adventure.

Baldur's Gate itself hasn't yet had its big unveiling. The first map is massive, and from above you're only seeing the surface details, not all the caves, dungeons and hidden places. To end the demo, Vincke jumped to a later save, around ten hours in, but it was still on the same map. Depending on the route the party takes, it could take anywhere between 10 to 20 hours to hit that point. While Larian's keeping schtum about the city, it seems like it's making the journey to get there meaty enough for some good anecdotes for the tavern.

Despite delving into someone else's toy box, there's no evidence so far that Larian has toned down its style or identity. My biggest concern was that Baldur's Gate III would be too beholden to the old games, but while it's shaping up to be an authentic D&D game, the same design philosophy that gave us Divinity: Original Sin II is very much at its core. Especially when everything is on fire. PC


You'd think people would stop going to the beach after this happened once. Nope.

DEVELOPER TRIPWIRE • **PUBLISHER** IN-HOUSE • **RELEASE** MAY 22
tripwireinteractive.com/games

Maneater

A shark RPG that aims at more than just novelty.

If it were easy to make games about being a shark, I'd be able to name more than just Jaws Unleashed – a 2006 game Tripwire played as it figured out how to build its shark-based RPG. With the caveat that there isn't much competition, Maneater may be the best shark action yet.

Fish don't talk, which makes storytelling difficult. To solve that, Maneater is framed as a reality show akin to Deadliest Catch, with actor Chris Parnell narrating your movements in the water, explaining your shark nature as you swim around devouring hapless beach-goers.

You have a human nemesis, a shark hunter who's the star of this reality show, as well as underwater enemies, apex predators who've muscled into your gulf territory. It's time to restore some natural balance. Gobbling up fish is fun, but I felt the greatest catharsis from terrorising the humans. I only wish they freaked out more when I lunged onto their boats, or even when my fin appeared on the surface – they accepted their fates a little too easily.

Other issues make a shark RPG tricky to design. How does a shark level up, for instance? In Maneater, you literally grow, beginning as a nimble pup and ending the game as a behemoth capable of tearing apart fishing boats. And if it wasn't clear that Maneater isn't really a nature documentary, you can also upgrade your body, forming a bony exoskeleton to bash ships with, bioelectric talents, or some stealthy, vampiric traits.

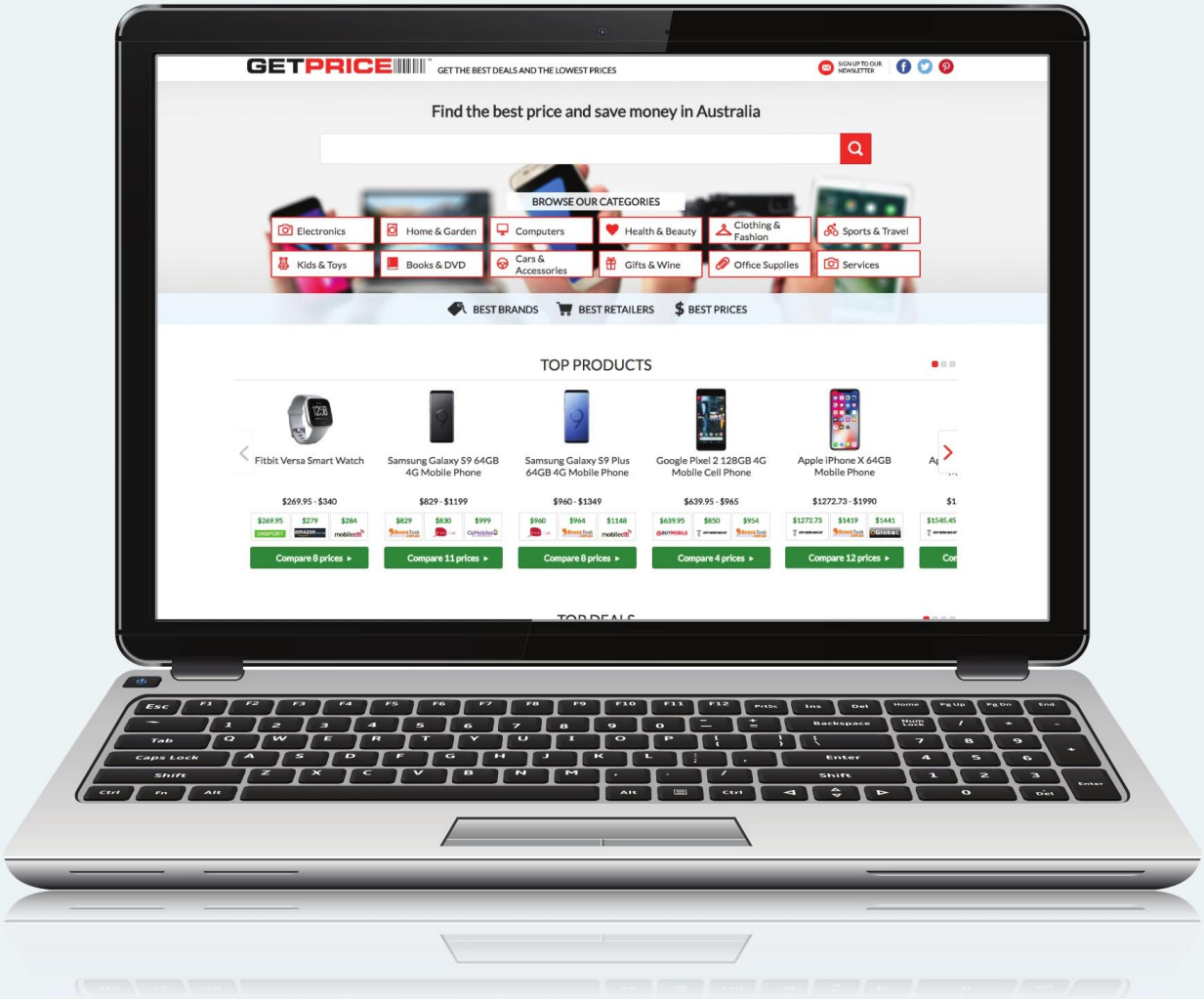
BITING POINT

The controls take some getting used to, and it's optimised for a controller right now, though it will support keyboard and mouse. Essentially, Tripwire has to design a melee dogfighting game. You move through three-dimensional space – at least until you breach the surface and start snapping at humans – and attack with bites and tail whips.

A degree of automatic locking-on makes it manageable. Aim nearish a fish, hit the right trigger, and you'll lunge into a bite. Tapping the right trigger chomps and swallows, and you can also wiggle the right stick to thrash your prey around and pacify it first. Better, though, is going full Looney Tunes and smacking your catch with your tail to fire it like a projectile.

The quality of the tougher fights with apex predators and the coastguard – who appear as part of an armada that responds to your GTA-like infamy level – will determine if all the chomping and evolving is worth it, and Tripwire is confident that it's more than a novelty shark sim. But just exploring Maneater's seven regions while Chris Parnell tosses out gags seems like a good time, too, especially if you enjoy marinescapes as much as I do. PC

TYLER WILDE



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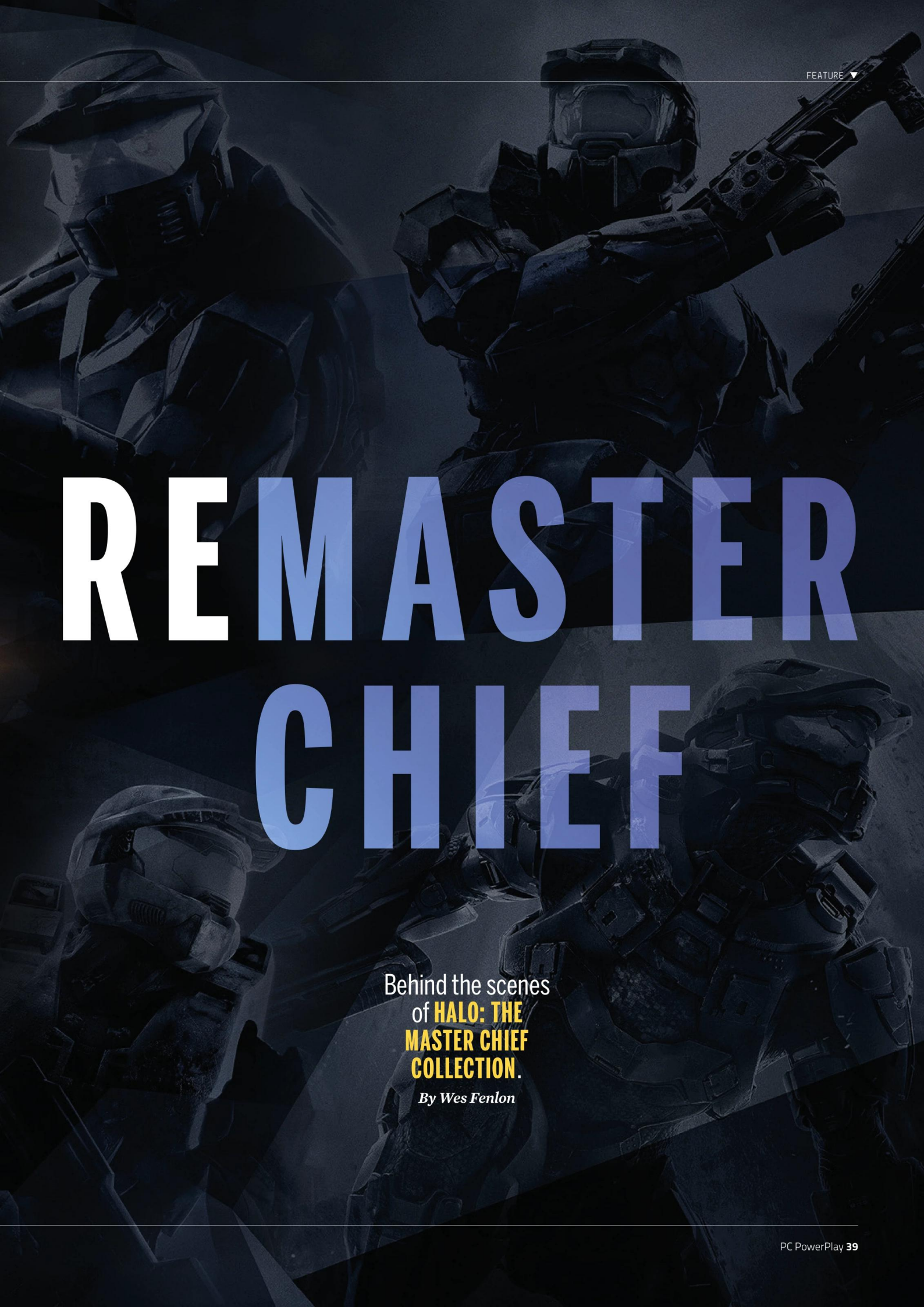


REMASTER CHIEF

Behind the scenes of **HALO: THE MASTER CHIEF COLLECTION**.

By Wes Fenlon

Slayer!" Is there a voice clip I've heard more in my life than *Halo*'s gravelly announcer preparing me for combat? Maybe one of his other callouts: "Double kill." "Triple kill." "Overkill!" (OK, now I'm just bragging). If there's anything truly and utterly timeless about *Halo*, it's that voice playing over the warm blue sky and dusty fields of Blood Gulch. *Halo: Combat Evolved*, now released for *The Master Chief Collection* on PC, looks today exactly as it always has in my mind's eye: the same as it was on chunky CRT TVs at splitscreen LAN parties, the same as it was on the PCs in my high school 3D modelling class. My memory, of course, is wrong.

The Xbox and gaming PC and CRTs I played on in the early 2000s couldn't run *Halo* at 144 fps, and they definitely couldn't do it at 4K. If I went back to them now, I'd grimace at the low resolution, and how sluggish it actually felt to hop across Blood Gulch. But this new version of a near-20-year-old game is sharp as hell and more responsive than ever, even if its polygons are old enough to drink. Making a game look and sound like it does in your memory, but not newer, is the delicate balancing act of The *Master Chief Collection*, which 343 Industries is bringing to PC this year one *Halo* game at a time.

There's no detail too small for the fans to notice. Case in point: another classic *Halo* sound, the respawn beep, was slightly different in the original PC port, made by Gearbox in 2003. When 343 created *Halo: Combat Evolved Anniversary* for Xbox, that PC port served as the foundation. But a few things weren't right, which they now have an opportunity to fix.

"That respawn beep is so iconic, you know what I mean?" says Sean Swidersky, associate producer on *The Master Chief Collection*. "Between the two versions there is a difference in tone ... I think our pillar here is to align to the legacy games as best as we can."

"It does get super complicated," adds senior producer Mike Fahrny. "Just because we have source assets and code and all that stuff, it isn't a magic bullet most of the time. It does require a lot of digging.

"There's a lot of rabbit holes we go down. And then you add the fact that *TMCC* is all these things in one, right? It gets very, very complicated."

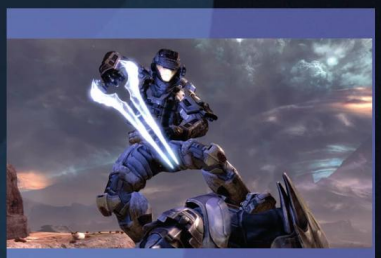
"OUR PILLAR HERE IS TO ALIGN TO THE LEGACY GAMES AS BEST WE CAN"

Over the course of a long day at 343 Industries in Redmond, Washington, I talked to the team ending Master Chief's PC dry spell about the success of *Halo Reach* in December, all the intricacies of retrofitting old games for new hardware, and got the scoop on the latest release, *Halo: Combat Evolved*.

When Mike Fahrny started on the *MCC* team last year, the first thing he did was go out and buy an ultrawide monitor. They didn't have one, and he knew ultrawide support would be one of the features PC fans asked for. "I'm a PC enthusiast. It's one of the reasons they brought me in," he says. "We have a lab set up that can do various hardware settings, and then flighting was really key for us in having the successful launch that we did. I think one of the big mistakes that studios developing for PC make these days is they do it kind of in a vacuum. We decided very early on we didn't want to do that."

IT'S COMPLICATED

This ideology of 'flighting' – essentially beta testing – started at 343 Industries before *The Master Chief Collection* came to PC, but it's hard to overstate how transformative it's been for *Halo*. Back in 2014, *TMCC*'s release on the Xbox One was something close to a disaster. Online play



RIGHT: *Halo: Reach* debuted big on Steam with about 150,000 players at launch.

BOTTOM LEFT: *Halo: Combat Evolved's* campaign got a big makeover in 2011.

ABOVE: *Combat Evolved's* The Silent Cartographer mission is still an absolute banger.

simply didn't work for many players, and other issues big and small made the whole thing feel barely held together with tape. It was a black eye for 343 that didn't fade until 2018, when a new dedicated team started to rebuild Master Chief.

"I believe that was the beginnings of the first time the studio has ever had a flighting program where we started to work on this system of alpha-style builds to iterate on with players giving us feedback," says Brian Jarrard, community director on the project.

Jarrard writes many of the massive community updates that have come to define 343's new era of transparency around rebuilding *The Master Chief Collection*, and it was on an Inside Xbox stream in early 2019 that he announced *Halo* was finally coming to PC. Inspired by a viral Reddit joke, ecstatic PC fans started sending pizzas to the 343 office. As more and more pies piled up, he had to beg them not to send more.

"They expect a lot, and the bar is very high. My guess is there's a lot of pent-up sentiment that a lot of times PC gamers feel like they're getting the leftovers from consoles, getting bad ports. So it was important to us that this could not be just a port. We had to figure out the way to make it feel like it was a native PC product."

The exciting news is that every game is up and running on PC right now, in various stages of completion. The list of expected features is easy to rattle off: unlocked framerates, 4K support, dedicated servers, mod support. Actually implementing them... well, that's less so.

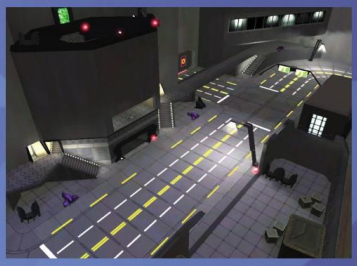
Let's start with framerate. Say you're simply taking a game originally locked to 30 FPS and making it run at 60 FPS. When game code is written, explains technical director Andrew Schnickel, some things are set to happen every 1/30th of a second, while others are programmed in relation to one 'game tick'. At the original framerate, those would be equivalent. But if you double the framerate, all of a sudden they aren't. This can make guns fire too quickly, or effects animate at the wrong speed. It can even break bits of the campaign, because scripts don't trigger properly. It varies from game to game.

MAPS OF MY YOUTH

These two maps dominated* Halo: Custom Edition *community servers. Will they make a comeback in 2020?

WARTORN COVE

Two valleys open out into a cove where a tank sits, waiting to dominate the map. CTF matches were full of heroic and foolish warthog runs, trickery with the teleporters, and hopeless assaults on that tank.



NEW MOMBASA CLASSIC

An at-the-time awe-inspiring recreation of Bungie's 2003 E3 demo for *Halo 2*, turned into a multiplayer map. Vehicles could dominate the wide city streets, but the sewers made sneak attacks a thrill.

"It's hard to go through all the mission scripts line by line and go 'Oh, this is going to be a problem,'" says Schnickel. "It's easy to miss stuff and sometimes it would just exhibit in weird ways. There was one in, I think, the *Halo 4* Spartan Ops – there was a jackal up on a cliff somewhere, and you couldn't kill him. You'd be shooting at him and he just would not die. It was a script timing issue, so it just takes a lot of careful debugging to find that."

Uncapped framerates are even harder for old games, since the original programming's dependence on frame timing goes completely out the window. Animations are tricky. If they were created for 30 fps, adapting them to a framerate like 144 fps requires a lot of interpolation – the path the animation takes between defined key frames. That can have some weird side effects, like graphics clipping through one another. Fahrny says their first animations for *Reach* even caused motion sickness in some players. The brain can tell something weird's going on with that kind of interpolation. But creating completely new animations for these old games isn't feasible, so it takes a lot of iteration to get it as good as it can be.

Little quirks pop up everywhere, from the netcode to the controls. *Halo Reach* plays like a dream on dedicated servers, but strangely, the AI Grunts in the Firefight mode lost

the ability to jump up onto boxes. Sean Swidersky, who comes from a pro-gaming background, mentions that in early test flights European players' grenade throws seemed to be delayed. After upgrading some of the Microsoft Azure servers used to host games, and making some changes to how network traffic is relayed, they started behaving as they should.

At launch, the most widespread criticism was that it sounded muffled and just... off, from the original. It hasn't been a quick fix. "It's caused us to go back and say 'Hey, we should just take a look at the audio for all titles,'" explains Mike Fahrny. "*Reach*'s [digital signal processors] for whatever reason were not great, so let's go back to a partner that has the sources for these, rebuild them for modern platforms, while we have an actual audio engineer go back through and make sure everything is balanced and levelled properly. That takes a long time."

While fans see 343 as the monolithic studio in charge of *Halo*, the truth is that the team behind *The Master Chief Collection* is small. Most of the work is outsourced, with Fahrny and his team steering the ship. "Sometimes things just take time, and it's hard to communicate that out to the fanbase," he says. "This is modern game development. We need to not be scared to say 'Yeah, we ran into some problems. This is what our plan is, let's talk about that, let's work together on it, we're going to flight it, please give us feedback on it, what you say matters to us, we'll adjust'. It's moving along pretty well. I think people will be happy with the end result, though they've had to wait longer."

EVOLUTION

The Master Chief Collection began on PC with Bungie's final *Halo* game. Now it's followed that with the first: *Combat Evolved* followed *Reach* onto Steam on March 3. I spent two hours at 343 bouncing between campaign missions in a near-final build, which sported upscaled versions of the 2011 *Anniversary* makeover graphics. The geometry is still mostly simplistic, but it looks great for its age. All the character models are far more detailed than they used to be, and major characters like Commander Keyes and Sgt Johnson have gotten especially big upgrades.

ABOVE: Master Chief meets 343 Guilty Spark, and almost ends all life in the universe. Oops.

The textures on your marine companions and the aliens of the Covenant are sharp and well-defined, instead of borderline amorphous blobs. And it has real lighting!

Multiplayer never got the same makeover, but I'd argue that's actually a good thing. There's a purity to the first *Halo's* multiplayer that I love, even if, like a lot of players, *Halo 3* is the one I'm really waiting for on PC. With more detailed graphics, the simple geometry of classic maps like Blood Gulch and Hang 'Em High would look out of place, but adding objects to the maps would change how they play, and go against *TMCC*'s mission of preservation. Of all the games, *Combat Evolved* is the one for which 343 should be least concerned about balance.

"You know the story behind the pistol, right? That was actually a bug and it shipped that way," Jarrard remembers. The almighty *Halo: CE* pistol and its killing power has been the subject of debate over the years, mostly whenever a successive *Halo* comes out with an inevitably weaker magnum. But today it's firmly part of *Halo*'s legacy. "In retrospect, if we had flighting back then, we probably would have had overwhelming feedback that would've made the team completely nerf that thing into the ground. But after the fact, the studio decided to just leave it."

The other key to *Combat Evolved*'s legacy, at least on PC, is modding. I spent one summer as a teenager playing the same map day after day, CTF matches dragging on for entire

CONTROLLED CROUCH

How do you ensure* Halo *still feels like* Halo, *no matter the controls?

It turns out *Halo*'s analog stick crouch doesn't work on the digital inputs of WASD. The fix, coming soon, is noticeably faster. "You do get more freedom to crouch as you're moving," says Sean Swidersky. "Some users feel this is natural for sure, but I'm more curious about the competitive side of things... It's not too outrageous, but seeing someone crouch super fast, in those older games, it just looks different."

afternoons. For console players, the equivalent was probably Blood Gulch or Sidewinder. For me it was Wartorn Cove, a custom map that dominated community servers back in 2004. Because the multiplayer in the *TMCC* port is largely unchanged, it should be easy for modders to get old maps like that working again.

Long term, Fahrny wants to build out *TMCC* with direct modding support. That could mean releasing tools, building a custom game browser, and even supporting the Steam Workshop, which he says they'd "still love to investigate doing". Right now, the focus is on getting all the games out on PC, and to at least make them as easy to mod as possible. *Reach* can be launched with anti-cheat disabled to facilitate mods, and 343 is working on a new EULA, inspired by *Minecraft*, to let modders preserve some ownership of their creations.

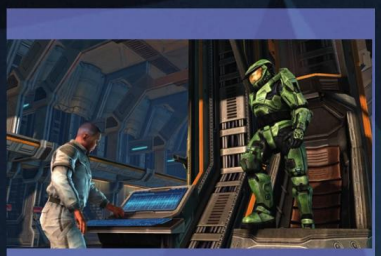
When we talk about mods, Swidersky excitedly asks everyone if they've seen the nuke video on Youtube. Someone already modded a nuke launcher into *Reach*, complete with some impressive explosion effects and huge damage (it annihilates a Scarab, *Halo*'s equivalent of the AT-AT, in one shot). He's excited about the idea of custom games playing with the rules of *Halo*. Could someone mod in *COD*-style kill streaks that can earn you a nuke launcher? Weirder things have happened...

One of the programmers on the team, Sean Cooper, was a longtime member of the *Halo: CE* mod community, before moving on to mod *Halo Wars* and eventually working on the series. Fahrny hangs out in a Discord server dedicated to modding. The *TMCC* team has five games to go before this PC journey is finished – and with *Halo Infinite* coming in 2020, too, it's a hell of a year for *Halo*. But it seems like the truly exciting times for the series on PC, at least for *Combat Evolved* and its mod scene, start when all the launch fires have been put out and all the bugs have been squashed.

"WE GIVE THE KEYS TO THE COMMUNITY AND IT'S OFF AND RUNNING"

"The future of the *MCC* is the community, says Fahrny, "and how we empower them."

"That's kind of always been the master vision, is [our team] creates this amazing foundation, and then we give the keys to the community and it's off and running," adds Brian Jarrard. For the first few bitter years of the *Master Chief Collection*'s life, that would've been a hard sell. Now? It seems like *Halo* fans can believe again. ■



LEFT: *Halo: CE's* monstrous magnum is plain unfair with a mouse.

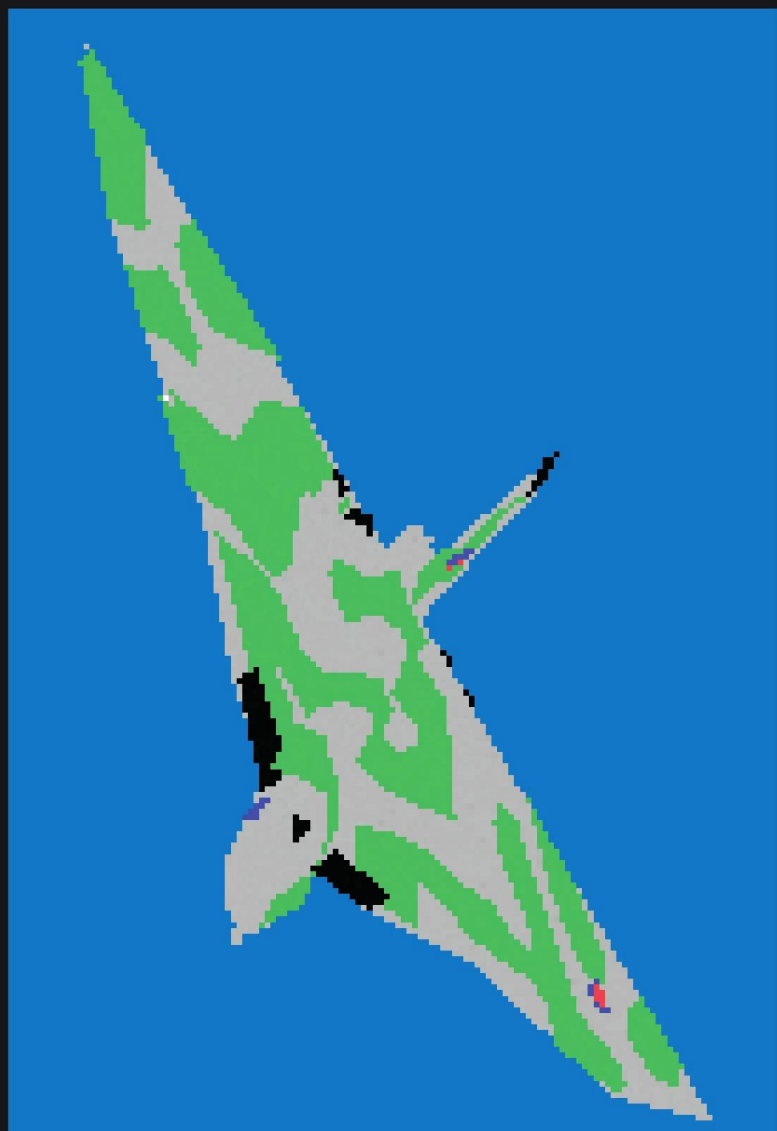
LEFT BELOW: The warthog is still one of the most fun vehicles in games.

THE RETRO SPECIAL

PC PowerPlay
AUSTRALIA'S #1 PC GAMING MAG
SINCE 1996

Looking back on some of our favourite classics – and the ways their influence is still felt today.

p96 DOOM
p58 SHOGUN: TOTAL WAR
p54 HALF-LIFE
p60 FLIGHT SIMULATOR 4.0



A HISTORY OF VIOLENCE

The story of **DOOM** and how it changed everything – as told by co-creator John Romero.

By Andy Kelly

In the winter of 1993, Dallas, Texas-based developer id Software released a game about a space marine killing demons, and a legend was born. *Doom* set the standard for the first-person shooter on PC and beyond, and was one of the first videogames to bleed into mainstream pop culture. It was critically acclaimed, technically groundbreaking, a sales success, and is still considered by a huge number of people to be one of the best games of all time.

Today, co-creator John Romero runs his own studio in Galway, Ireland. He's currently working on *Empire of Sin*, a turn-based strategy game set in Prohibition-era America. This is a far cry from *Doom*, but the landmark shooter is never far from his mind. In 2018, Romero released *SIGIL*, a brand new *Doom* episode. And his Twitter feed is a goldmine of anecdotes, rare photos, and other *Doom* ephemera. But why, when so many other games from the '90s have been forgotten, does *Doom* endure?

"It's programmed really well," says Romero, speaking from his studio in Galway. "And releasing the source code has allowed ports to keep it at a highly playable level. If you play it in DOSBox, it still feels pretty good. But it's not as smooth as it is on today's machines. I actually think it feels better playing it with a source port nowadays. There was a tipping point a while ago where people would swear you had to play the original DOS version, but now these source ports make it feel really good."

RIGHT: Romero, who has been making games since the late 1970s, hand-coded much of what makes *Doom* special.

FAR RIGHT: *Doom's* weapons still feel great, a result of months of fine-tuning in the early stages of the game's development.

SPECIAL EDITION

Another important part of *Doom*'s magic, and the reason it still feels good to play today, is how brilliantly crunchy its weapons feel to fire. "We had a limited amount of experience putting guns in a shooter when we made *Wolfenstein*. But with *Doom*, we spent a year with those weapons. We had a lot more of them, and they were not all the same kinda thing. We had energy weapons, rockets. So we spent a lot more time focused on balancing, and the speed of weapons in relation to the player's speed, and everything else."

Doom's fast-paced, brutal combat made it a smash hit, but Romero and the rest of the id Software team knew long before release that they were onto something special. "We knew that before we made the game," says Romero. "We planned *Doom* for a couple of months before we started working on it. It's kinda unbelievable, but we even put out a press release saying it was going to be the best game in the world."

This press release, sent to the games media in 1993, says *Doom* will feature revolutionary programming, advanced design and faster texture-mapping than any other game – some incredibly bold claims that all turned out to be true. "It was just crazy, especially as we had just started making the game," says Romero. "But we knew, even then, that what we were going to put in the game was going to be better than anything that anyone was making at the time. So we said that. But we've never said anything like that again."

Doom is often thought of as an overnight success, but before id Software released it, the studio had already developed dozens of games – including several relatively primitive first-person shooters.

MARS ATTACKS *The mainline* Doom *series so far*

DOOM
1993
The game that started it all, elevating 3D first-person shooters way beyond anything that had been released before. And it's still really fun to play today.

DOOM II: HELL ON EARTH
1994
A sequel that was largely more of the same, but with bigger, more intricate levels. There was also double the number of demons to slaughter.

DOOM 3
2004
The third *Doom*, which John Romero was not involved in, had an increased focus on horror and atmosphere. It's the least *Doom*-like of the main releases, but an interesting take on the series.

DOOM
2016
In what may be one of the greatest reboots of all time, Bethesda and id Software brought *Doom* bang up-to-date in a wildly entertaining way with the simply titled *Doom*.

DOOM ETERNAL
2020
And they're doing it again with *Doom Eternal*, which doesn't just turn the *Doom* formula up to 11, but rips the knob off the speaker and then theatrically boots the speaker into a demon's face.

"Before we started making it, it was our fifth first-person shooter," says Romero. "We were a small company, but *Doom* was game 20-something.

"We'd made a ton of games before *Doom*, and that was only in a few years. We got together in 1990, but I'd been making games since at least 1979. I had dozens of games already made. When we got together, we spent years making a lot of games together before we even started work on the *Doom* project. So we had a lot of practice both separately *and* together."

It wasn't long until word about *Doom* began to spread like wildfire, and people were somehow getting a hold of id's office number and asking when the game would be released. "I have no idea how that happened," says Romero. "People had heard about it on the internet and were going crazy waiting for it to be released. That was really cool.

"I remember the January or February issue of Computer Gaming World, which was the big magazine back then, and they had a section at the very back with new releases. They would write a couple of quick paragraphs with a screenshot.

And *Doom* was just in there, and it said 'You're a space marine and you're killing aliens in a base'.

And that was it!"

"AT SOME POINT IN EARLY 1994 WE STARTED NOTICING THAT EVERY GAMING MAGAZINE HAD DOOM IN IT"

DEMON DAYS

But despite an initially lukewarm response from the media, id Software knew from the number of orders it was receiving that *Doom* was going to be a success. "Back then Usenet was a thing, and there was a weekly top 100 games list. *Doom* came out and it got to the top pretty quickly, and it just stayed there. Then, at some point in early 1994 we started noticing that every gaming magazine had *Doom* in it, in one way or another."

Romero remembers an article in PC Gamer where writer Matt Firme talked about how *Doom* had taken over his life. "*Doom* has forever redefined our expectations of PC gaming," the article read. "If any new game hopes to win the title Game of the Year, it'll have to beat *Doom* first." Romero also has fond memories and high praise of a *Doom II* article published in 1994. "It had the coolest two-page spread with the title 'UNSPEAKABLE', with the Icon of Sin, and I loved that. That's my favourite article on *Doom* ever."

BLOOD SIMPLE

Doom's 'controversial' violence was another string to its bow, with tabloid hand-wringing only adding to the game's popularity. The more people who said kids shouldn't play it, the more kids played it. Taking advantage of this controversy, publisher GT Interactive had some, uh, interesting marketing ideas. "They sent packages of guts to reviewers," says Romero. "And they'd have to dig through it to get the floppy disk."

For Romero, this sudden surge in popularity was exciting, but not completely new. "The whole ride was pretty natural," he says. "During the 1980s I had seen personal success in programming that no one else knew about, except maybe my parents. But I was learning stuff, making games, selling games. They were going into stores and I was getting covers of magazines. I was doing all of this stuff while I was in high school."

Romero had even worked for the US Air Force. "I knew how to code so they had me in a vault programming top secret stuff. Because I was working hard on programming, a lot of cool stuff happened. Then I got my first job at Origin Systems, which to me was the ultimate. I was like 'I'm done. I'm now working at the best company I ever wanted to work at.'"

Romero and id Software had also had some interest from the press before, with earlier games like *Commander Keen* and *Wolfenstein*. "There were a lot of amazing reviews in magazines and on the internet

ABOVE: An early example of *Doom's* multi-story level architecture, which was unprecedented at the time.

RIGHT: Artwork like this helped sell the idea of *Doom*, and has since become synonymous with the series as a whole.

"THEN I GOT MY FIRST JOB AT ORIGIN SYSTEMS, WHICH TO ME WAS THE ULTIMATE"

about how *Commander Keen* was changing the PC, making it a Nintendo contender. Then with *Wolfenstein*, we got our first radio interview and TV stations came over to do stories. We went to Disney World and people recognised us. So it was like 'Wow, OK, this is the beginning of something. We're doing some cool stuff'. And then *Doom* was the next level, basically."

Doom was created in a time when 3D games were still fairly basic, but for Romero and the others on the team, the hardware limitations of the day were something to be conquered and not to be beaten by. "We were trying to break away from those constraints, and that's why *Doom* was better than other games," he says. "640k was the memory limitation for most games back then, but *Doom* was the first we made that went over the 1MB boundary."

OS AND THEM

Doom's technical advances were also made possible by the switch from DOS computers to advanced NeXTSTEP workstations. "We developed *Doom* on a superior operating system, which allowed us to do more," says Romero. "We developed it on a NeXTSTEP system, which is today's OSX.

"We actually started using this OS back in 1992 during the development of *Wolfenstein*, but to lay out books and stuff like that. Then when we started working on *Doom* we got NeXTSTEP workstations for everyone and it was like night and day. It felt like DOS machines were little toy computers in comparison. They had 1024x768 16-bit graphics. The programming toolkit was unbelievable. So we had worked hard to break out of the box that DOS game developers were normally restricted to."

Doom's complex, abstract, secret-filled level designs are often held up as an example of how modern games have dumbed down. I ask Romero why he thinks this kind of design has fallen out of favour. "Most first-person shooters try to replicate the real world now, and that was kinda where graphics were going the entire time since *Doom*," he says. "People were even modding *Doom* to try and make it look more realistic.

"*Marine Doom* was used by the military to get soldiers used to fast reflexes and reactions. That was replacing the graphics with scanned-in normal humans instead of pixel art monsters. The trajectory of graphics has always been realism, so why wouldn't you make the environments realistic too? And the artistic design of abstract levels is contrary to that.

"*Doom*'s puzzles made sense in

ABOVE: All white, a bold fashion choice even for the time. You just can't get blood stains out of material like that.

CONSOLE COMMAND *Romero on Doom 64, which you can now play on PC*

"I thought it was great. We allowed Midway to do whatever they wanted to do with *Doom*. They were a real game dev company who had been around for decades. Smart people, great programmers. We could trust that they would do a good job with *Doom*. When they made PlayStation *Doom* they did an incredible job, but with *Doom 64* we said they should do something different than just replicating the original game. Aaron Seeler, who programmed *Doom 64*, came to Texas and he had an office on our floor so he could pick John Carmack's brain at any time for tips on how to get the Nintendo 64's chip to run fast. The lighting was great, they were making great levels, and we were very happy with *Doom 64*. And that's why it's being re-released. It was a fantastic version."

that kind of space, but that's harder to do in a realistic setting. However, I think *Half-Life 2* did an amazing job of putting really interesting puzzles in an FPS through physics and stuff. They did a great job of moving the design language forward."

LEVEL UP

But creating these levels was hard work – doubly so because no one had made game worlds with this level of intricacy before, especially in three dimensions. "One of the biggest hurdles in developing *Doom* was the environments," says Romero. "Just before *Wolfenstein* we made *Catacomb 3D* and that was our first texture-mapped 3D game. Those environments were like dungeons. Just running through tunnels killing stuff. *Wolfenstein* had VGA graphics and it looked better, but it was still a maze game. And before *Doom*, every three-dimensional game was basically a maze game. Going back to 1974, everything that was 3D was a maze. If you played *Ultima*, *Wizardry*, or *Might & Magic*, or any game that had a 3D environment in it, you were always in a 90 degree walled maze.

"So we didn't have any example of how to do something different, and it was a lot of work trying to break out of that. Even the early *Doom* levels we made as examples when I was programming the *Doom* editor were still very *Wolfenstein*-looking, and they weren't fun to play in. They were basically boring. So I decided one day to solve the problem."

Romero spent a few hours

PORT OF CALL

The weirdest things* Doom's *been ported to

"THE ACTUAL LAYOUT AND ARCHITECTURE OF THE LEVELS NEEDED TO BE FUN TO PLAY IN"

LEFT: The original chainsaw sprite was based on a photograph of a McCulloch Eager Beaver, a real-life chainsaw.

ABOVE: *Doom II* introduced a number of monstrous new demons, including the iconic (literally) Icon of Sin.

RIGHT: id Software is a classic example of a small, talented group of dedicated people changing the face of an entire industry.

experimenting and came up with a few sample environments that were far more interesting than the samey mazes of *Wolfenstein*. "The other guys saw it and they were like 'Wow, this is it. This is the style we need to go for'. And so we went full-on abstract, not worrying about making things look realistic.

"We could make objects in the world look realistic, like crates and stuff, but the actual layout and architecture of the levels needed to be fun to play in, look cool, and not adhere to any kind of realism. They just needed to be really fun, and that was the beginning of *Doom*'s abstract style of level design, which basically all '90s games went on to use.

"Darkness was a really big factor in making the game feel suspenseful and tense," explains Romero. "In E1M3 when you go to get the keycard, it's the first time that the lights are turned out on you. People never forget the first time they saw that. You grab the blue keycard, the lights go out, and you just hear hissing. You turn and you see the silhouettes of about five Imps coming at you in a dark room and you have to find the way out."

CRACKING THE CODE

But *Doom*'s engine unfortunately had no built-in support for doing tricks like this. If Romero had an idea for something cool, he couldn't just quickly rig it up – he had to go in and code it himself. "When you see lights flickering, doors opening, lifts going up and down, taking damage from slime... any gameplay thing happening in a level, I did all the programming for it, which came from what I felt like I needed to have in the game at that time.

"So if I'm like 'Oh, I need to have the floor rise out of the slime, and I need the floor to turn into a normal floor when it rises. What are the rules for that happening?'. Then I had to go into the editor and code that trigger and what that trigger does. Then I needed to go into the game code and program it so it would actually do that. Then I had to go back into the editor and put it into the level to see if it would work the way that it should. And I had to do that with every single special thing in the game.

"*Doom* was designed as we were making it. There wasn't a big list of all the things we needed. It was like 'I'm making a level and it would be cool to have a flickering light here', and that's it. Start programming it. And everyone who has been making *Doom* levels since has been using stuff I came up with in five minutes for that one thing. These features didn't take long to implement, really, but they've lasted for decades."

And that's the core of what makes *Doom* a genuine masterpiece. It was created by a group of supremely talented, passionate people who were obsessively pushing the technology of the time to its limits – and doing so because they wanted to make something great. Everything else aside, it's just a really well-made game, and will likely endure for another three decades.

As for John Romero, he's still a part of the games industry, still making games, and still keeping *Doom* alive with projects like his *SIGIL* expansion. A lot of games burn bright then quickly fade away, but *Doom* is eternal. ■

UNFORESEEN CONSEQUENCES

22 years later, HALF-LIFE's influence is still being felt.

By Jody Macgregor

I recently spoke with Vincent Adinolfi, an indie designer working on a game called *Heartworm*. It's low-poly 3D survival horror, so when he brought up influences like *Silent Hill*, *Resident Evil*, and even *Dino Crisis*, that was to be expected. But then he mentioned Valve's classic 1998 FPS. "I've tried to take cues from games like *Half-Life* in the way that Valve uses environment design to naturally develop the narrative," he says.

It's not the first time I've heard developers namecheck *Half-Life* while making games very different to it. Its effect on the way games tell stories transcends genres. Which is surprising given how few other 1990s shooters even had stories.

John Carmack of id famously said stories are as irrelevant to games as they are to porn, which explains *Quake*. Sure, adventure games and RPGs might need plots, but what does an FPS have to gain? When *Half-Life* proved even a game about shooting zombies could be improved with a memorable story, it made the point for everyone. And it did it

INTERVIEW

Dario Casali
Level Designer, Valve

On Black Mesa:
"I played probably five hours of the original *Half-Life* and then I said, 'Well, what are you doing? Just go play *Black Mesa* cause they've just redone this in Source'. Then I just restarted, I started *Black Mesa* from the start. I played through all of that, and they did an awesome job. Such a great execution that I kind of didn't want to go back and play Xen from *Half-Life*."

On underexplored potential:
"With *Half-Life*, I feel like there was such a rich set of mechanics I don't think that we exploited fully. I think we jumped to *Half-Life 2* immediately and then reinvented everything. I think there would have been a lot of room for further exploitation for the use of some of those mechanics and we just never did."

» without cutscenes or a single paragraph of text. Mainly, it did it through Black Mesa.

INTENSIVE SCARES

Half-Life's writer Marc Laidlaw once explained on his blog that *Half-Life* was initially planned to be a nonlinear game. That all changed because, as he put it, "All narrative forms of drama, but especially horror, rely on pacing and rhythm. In horror timing is crucial. You have to set up your traps just so, and wait until your victim is precisely in position."

While previous shooters had elements of horror – *Doom* had a chainsaw and shotgun because id were fans of Evil Dead II – the games were never horror themselves. They were action in Halloween clothes.

The first third of *Half-Life* is, as Laidlaw says, explicitly horror. There's the slow burn, where we're introduced to the characters at their most mundane, though with teasing hints of what may be about to go wrong. Then we see their ordinary world turned upside down, made dark and broken. Just like Alien, or Night of the Living Dead, or It.

Half-Life's flashlight and its recharging battery are essential to its scares. You crawl through a vent, throwing that pool of light ahead of you, knowing it could run out before you reach the nearest exit. You turn it off to recharge for a moment, flick it back on, and light up a rearing headcrab's underside.

While several shooters after *Half-Life* copied its blend of horror and action, like the *FEAR* series (which also successfully imitated *Half-Life*'s squad AI), its influence was most felt in the first-person horror genre. Every game that gives you light as a limited resource, from *Amnesia* to *Outlast*, has that tiny bit of *Half-Life* in its DNA.

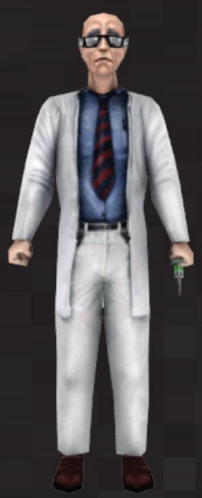
DEAD GOOD

When Laidlaw brought up horror he wasn't just talking about darkness and monsters. He was talking about set-pieces. The security guard with a zombie shambling up behind him, or the scientist trying to perform CPR on a fallen coworker. In *Doom* you find dead marines next to some spare ammo – in *Half-Life* you see their deaths and it hits you harder.

Ian Vogel, the level designer responsible for the Med/Sci level in *System Shock 2*, has said these "emotional anchors and prods" were a big inspiration for him. In *System Shock 2* you're on a research spaceship that's been invaded, a scientific facility that's in a similar state of emergency. You see a lot of people in lab coats being dismembered on the other side of bulletproof glass, a trick *Dead Space* would also notably repeat.

This formula – environmental storytelling spread across an impressive but collapsing testament to man's hubris – would see its ultimate manifestation in *BioShock*. Every game that uses deaths on the other side of doors, or bodies carefully arranged on toilets or in beds to tell a little story that you

ABOVE: I'm drawing a line from the Resonance Cascade to Thirty Flights of Loving. Then I'm nodding.



arrived too late to see, owes a significant debt to *Half-Life*.

To ensure you catch these moments, *Half-Life* guides you with trails of blood, screams and lights. It hints at puzzle solutions the same way. A vent will have a convenient light shining out of it so you know where to go, a switch gives off sparks to suggest it's connected to the sparking wire hanging in the water, a jumping sea-monster makes you look up at a shark cage, bubbles suggest life-saving breathing spots.

These techniques for pulling your eyes would be further refined in *Half-Life 2*, where a flying ship might draw your attention up to note a climbable spot, or a green light shine on an exit. From there they propagated, and everything from *Call of Duty* to *Mirror's Edge* signposts paths with *Half-Life*'s tricks.

MOD NATION

That's all on the single-player side, but *Half-Life*'s influence goes beyond that. Its multiplayer mod scene was as big as *Doom*'s, and gave us *Natural Selection*, *Cry of Fear*, and *Sven Co-Op*, all of which went on to become standalone games. The team behind *Age of Chivalry*, a total conversion which replaced guns with swords, formed Torn Banner Studios and turned their mod into *Chivalry: Medieval Warfare* – now getting a sequel this year.

Rights to the World War II mod *Day of Defeat* were bought by Valve and it too became standalone, while the modders who made the original *Team Fortress* for *Quake* were hired to develop *Team Fortress Classic* as a *Half-Life* mod to show off its multiplayer potential. Then they made *Team Fortress 2*. Without that there would be no *Overwatch*, and no hero shooter genre.

And of course there's the elephant in the room: *Counter-Strike*. Its creators, Minh 'Gooseman' Le and Jess Cliffe, were also hired by Valve and *Counter-Strike* became a series with its own esports league and an economy that puts small nations to shame. Without *Counter-Strike*, round-based modes where players work together in two squads to complete objectives doesn't become the default first-person shooter multiplayer mode, another game has to be the first to go in hard on recoil modelling, and 950,000 people have to find a new game to play.

This isn't the end of the story. Because while *Half-Life*'s influence is obvious once you start to look for it, its broader effect is invisible. It's there when Vincent Adinolfi, making his survival horror game – and every other designer tying narrative to level design – remembers how *Half-Life* handled environmental storytelling. Whenever someone thinks plot is more important in videogames than it is in porn, whenever they think that just because a game has guns doesn't mean it can't have a narrative, *Half-Life* is there. ■

TOP: Enemies fighting other enemies, something *Half-Life* borrowed from *Doom*.

ABOVE: Bad things happen to NPCs in vents.

On why people still care so much about *Half-Life* today:
"I read a lot of reviews, and I talk to a lot of people about what they like about the games, and when they describe them to me I feel like those types of things have been done again since. Is it perhaps that *Half-Life* and *Half-Life 2*, they introduced certain concepts to games pretty well? Like, the introduction of more interactive storytelling for *Half-Life*, perhaps we were laying the groundwork for that to be the norm in videogames to come."

On how well the game holds up these days:
"When I replayed it again, I was kind of blown away by the ambience that was created by the first half of the game. I think as you progress further in, you start to see like the game's age a little bit. But I definitely think that first third was very compelling."

DECLARATION OF WAR

How SHOGUN: TOTAL WAR started a 20-year legacy... but almost didn't.

By Fraser Brown

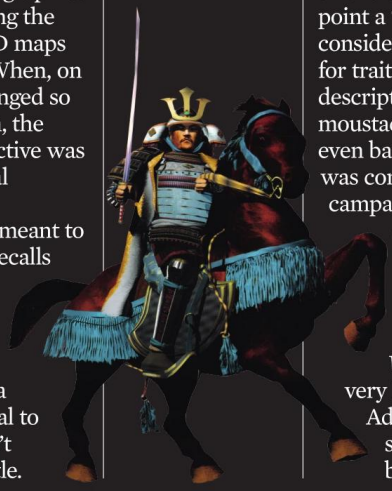
Two decades ago, *Shogun: Total War* spawned a history-spanning strategy series, several spin-offs and even a detour into Warhammer. Almost all of them are unified by tactical real-time battles, turn-based empire-building, and a foundation that was established all the way back in the late 1990s, during *Shogun*'s development. But the first concept for the game looked very different.

In 2000, Creative Assembly released its hybrid. There was diplomacy, trade, ninjas going around murdering people; then you'd quickly have to switch gears so you could micromanage individual units and crush your enemy in real-time scraps. These fundamentals haven't been changed, but before the studio came up with the enduring formula, it was creating a traditional *Command & Conquer*-style RTS.

SHOGUN CONTROL

The first change came when graphics cards started appearing, giving the team the freedom to build 3D maps with more realistic terrain. When, on a whim, the camera was changed so that it pointed at the horizon, the traditional top-down perspective was also thrown out. But one vital ingredient was still missing.

"The campaign map was meant to give context to the battles," recalls artist Nick Tresadern, who joined when the *Total War* team was just seven people. "We thought if we just did a series of battles in a row it wouldn't be as personal to the player because they didn't choose to fight that next battle. By doing the campaign map, the player chose to move into that province and fight that army; it made each battle particular to them."



Features more common in meaty tabletop wargames at the time also made an appearance, but thanks to the real-time 3D fights they were less abstract. Cowardly units could make a break for it and flee the battlefield, ignoring orders, while line of sight could be affected by fog and terrain.

"The battles innovated in a few ways, certainly in terms of battlefield realism," says UI designer Joss Adley, who also joined Creative Assembly during the *Shogun* days. "We still had these sprites running around, which everyone is familiar with, but we added morale, the idea of fatigue and the idea of weather affecting unit performance. It was quite severe in some cases – if it was a rainstorm, the primitive arquebus guns just wouldn't fire at all."

GRAND AMBITIONS

Shogun was two deeply connected games in one, and not a lot was left on the cutting room floor. At one point a 'Guess Who' feature was considered, where you'd have to look for traitors based on vague descriptions like 'he has a moustache'. It didn't survive. And even back then Creative Assembly was considering a multiplayer campaign – and a play-by-email system – though it didn't end up appearing until *Napoleon*. At least *Shogun 2* benefited.

"It completely laid the foundations for all the *Total Wars* to follow, and there's very little we removed," says Adley. "It was mostly adding on stuff. Obviously there was a big change with the campaign map style from *Medieval* to *Rome*, where it went from Risk-style to more action-point-based, but apart from that pretty much everything [else] remained."

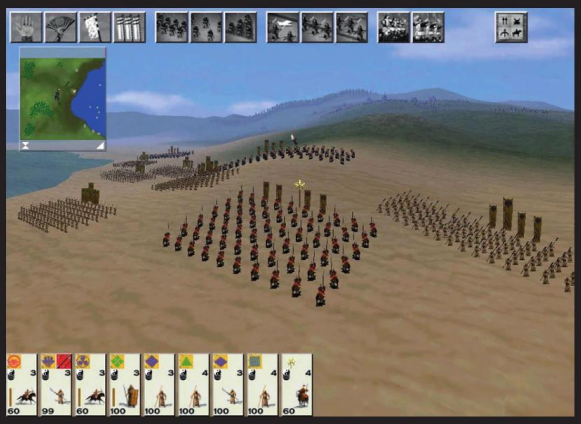
Creative Assembly, which had previously developed EA Sports games, didn't know it had a series on its hands, but it was prepared. "The *Total War* part is the brand, and that was in there quite early," says Tresadern. *Total War* was there before *Shogun* was settled on, and the team knew it could translate the game to another setting, which it soon did with *Medieval*.

With future games came new systems inspired by the settings, but other changes came with better tech. Multiplayer, larger army sizes, sieges with loads of destructible buildings – every iteration pushed things forward. Back in *Shogun*, even with the sprite units, memory constraints imposed some serious limitations.

"We didn't have enough memory to do left and right, so when the guys moved left it just flipped the sprite in real-time," Tresadern remembers. And while the campaign had a bespoke, themed user interface, the battle UI was stuck with some white boxes because there was no more space for textures.

While *Total War* has carried on what *Shogun* started, surprisingly few other games have even attempted to take a crack at it. Strategy developers have definitely taken notes and built on *Total War* ideas, but hardly any have remade the whole. Maybe they're the sensible ones.

"Setting out to make a project that's essentially two projects in one – it is double the amount of work – I think is just a crazy thing to do," says Adley. "I don't think anyone wants to go there. I'm surprised we did." ■



ABOVE: Even with the sprite units, it's still recognisably *Total War*.

FAR LEFT: The Throne Room scenes are one of the few things that haven't continued.

BELOW: The campaign was added to support the battles, but it's become just as important.

SHOGUN WAS TWO DEEPLY CONNECTED GAMES IN ONE

GO FOURTH AND MULTIPLY

FLIGHT SIMULATOR 4.0, the sim that started a subculture.

By Tim Stone

Ten years after the Wright Brothers outwitted gravity at Kitty Hawk, the revolution they started went into overdrive when European militaries realised flying machines were useful for more than just reconnaissance. *Microsoft Flight Simulator* experienced a similar growth spurt a decade after its birth, but happily in its case all-out war wasn't the spur.

Flight Simulator 4.0 inadvertently turned a franchise into a hobby by throwing open the hangar doors to all and sundry. The 1989 release came with a simple tool that allowed users to tinker with airframes and flight characteristics. More significantly, it was designed with the kind of porous edges and friendly file formats that helped people to build tools for it.

Soon meddlers had access to a pair of powerful aircraft and scenery editors. Within a few months the sim's high-detail landscape areas were multiplying furiously and being shadowed by all kinds of exotic cloud cleavers. There were bat-shaped Horten flying wings buzzing the tower at Meigs Field; low-flying supersonic SR-71 Blackbirds spooking invisible motorists on the Golden Gate Bridge; X-wing fighters barrelling down Broadway.

Because websites like FlightSim.com and Avsim.com weren't even eye twinkles at the time of this flowering, *FS4*'s enthusiastic band of fuselage sculptors and landscape gardeners relied on CompuServe's 'FSFORUM', the sim community's very first online meeting place, for distributing and discussing their wares. Little did they know it, but these pioneers were laying the foundations for what is today, gaming's most enduring cottage industry: *FS* add-on crafting.

PLANE PLETHORA

If it has wings – fixed or rotary – and has ever carried a homo sapien aloft, there's a pretty good chance you can fly it in a recent version of *Flight Simulator*. For an aviation enthusiast like myself, one of the joys of the series is that I can slip a bookmark into a pilot memoir or reference book, and, within minutes, be sitting in the cockpit of one of the machines I've just been reading about.

Today the choice of aircraft is dizzying. Fortunately for those of us with slim wallets and limited leisure time, for every £75 jetliner so brain-bruisingly faithful that customers use real aircraft manuals as training aids, there are hundreds of free or far cheaper offerings that can be enjoyed without hours of preliminary PDF study. Repaints, scenery enhancement packs, mission-style adventures... if you're not careful you can spend more time downloading and installing tempting extras than sampling them.

FLYING LESSONS

The failure of aspiring *Flight Simulator* replacements such as *Microsoft Flight* and *Flight Sim World* illustrate just how important open architecture is to a community that has known little else for the past 30 years. Both Microsoft's and Dovetail's short-lived experiments felt restrictive in comparison with what had come before and suffered for it.

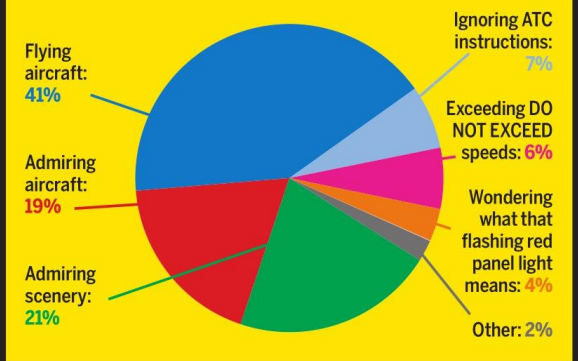
Will the next *Flight Simulator* make the same mistake? It's hard to tell at present. Official statements insist third-party add-ons are part of the grand plan, but until details of the business model emerge it's difficult to predict how enthusiastically the newcomer will be received by the hundreds of studios that are currently fixated on *Flight Simulator X*.

Sadly, one fairly safe bet is that the coming instalment won't be as overtly playful as *4.0*. Lurking under an unapologetic 'ENTERTAINMENT' heading in the veteran's menu are a host of modes designed to appeal to thrill-seekers rather than autopilot programmers. You can dogfight, barnstorm, crop spray and alight on carriers, when the crosswind low-visibility landings cease to stimulate. I hope Asobo's offering isn't so busy being ravishing and realistic that it forgets to include a few similar activities. Aerial firefighting, air ambulancing, or helicopter cattle driving, anyone?

But it's *Microsoft Flight Simulator*'s attitude to add-ons that could make or break it in the eyes of some silver-templed simmers like myself. *FS4* opened an aeronautical Aladdin's cave and I'd hate to see that cave closed off. ■

BLACK BOX

How I pass the time during an FSX flight


Flying aircraft: 41%
Admiring aircraft: 19%
Admiring scenery: 21%
Ignoring ATC instructions: 7%
Exceeding DO NOT EXCEED speeds: 6%
Wondering what that flashing red panel light means: 4%
Other: 2%

ABOVE: Textures wouldn't arrive until *FS5*.

FAR RIGHT: *SimplePlanes*' great great grandfather.

BELOW: *FS4*'s mouse utilisation was absolutely superb.

1 MODE 2 VIEWS 3 ENVIRO 4 SIM 5 NAV/COM
EXPERIMENTAL AIRCRAFT DESIGNER
X Reset Design Parameters
Rotate: 1 heading 2 pitch 3 bank 4 freeze 5 reset
Main Wings
A dihedral (degrees) : 00006
B span in feet : 00027
C aspect ratio : 002.70
D wingles
Stabilizers
E tail area : 00035
F horiz stab position : 00540
G horiz stab area : 00060
Propulsion
H Source: JET
I Power: LBS 10000
Menus
J COLOR DESIGN...
K ADDITIONAL PARAMETERS...
ESC Exit this menu
SPACE Return to simulator
FLIGHT SIMULATOR V4.0b

FLIGHT SIMULATOR 4.0 INADVERTENTLY TURNED A FRANCHISE INTO A HOBBY

281 Games

YOUR GUIDE TO THE LATEST PC GAMES.

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SCORING SYSTEM

PCPP scores its games on a 1 to 10 scale. The higher, the better – though 10 is by no means a "perfect" game. We're not convinced such a thing exists, so consider a 10 a masterpiece of PC gaming, despite its inevitable flaws. A 5 is a decidedly average game; one that doesn't excel in any particular area, without being an affront to our senses – the ultimate in mediocrity. Below this, you'll start to find the games our reviewers suffered an aneurysm getting through; above it, the titles truly worth your time and money. And remember: a score is only a vague indication of quality. Always read the full review for the definitive opinion!

POWERED BY
REPUBLIC OF GAMERS

Legends of Runeterra

Generous and innovative, Legends of Runeterra is a great alternative to Hearthstone.

DEVELOPER RIOT GAMES • **PUBLISHER** IN-HOUSE
playruneterra.com

I don't think I can stomach buying another booster pack after playing Legends of Runeterra. It's a necessary part of physical card games where cards often have real-world value, but their prevalence in digital card games is just an excuse to sell the worst kind of lootboxes. It's enough to make anyone cynical. But thanks to a generous reward system that avoids booster packs altogether, Legends of Runeterra is one card game that's easy to love.

You'd be forgiven for rolling your eyes at the thought of a free-to-play card game based on League of Legends. The card genre is full of these spin-offs. But Riot Games' take is full of clever innovations and tense duels dictated by your skill rather than how much you spend.

WHAT IS IT?

A generous free-to-play card game based on League of Legends

SLINGING CARDS

With its colourful aesthetic and good-natured charm, it's easy to mistake Legends of Runeterra, which entered open beta last month, for a Hearthstone knock-off. It takes the familiar faces of Riot's enormously popular MOBA and adapts their playstyle and abilities into a game where your primary objective is to build decks and play cards to reduce your opponent's hit points to zero. Though it walks like Hearthstone, Legends of Runeterra talks like a simpler version of Magic: The Gathering. That's to its benefit, as Runeterra avoids cribbing many of Magic's cumbersome rules in favour of faster, more aggressive duels.

For example: there's no 'summoning sickness'. Freshly placed creatures (called followers or champions) can attack immediately after being summoned and aren't tapped out after, letting them still block during your opponent's attack phase. It virtually guarantees that every turn both sides will take losses, making those clever plays where you bait your opponent or save a unit from dying feel extra rewarding. It's hilarious (and devastating) to cast Deny thinking I'm about to cancel my opponent's fatal spell only to have them cast Deny on my Deny. I really enjoy the back-and-forth of Runeterra's battles.

When interactions between cards get complicated, the game has a clever feature called the Oracle's Eye, which shows you what the board will look like after a certain attack phase or spell has resolved. Not having to double-check your math or worry that a certain chain of abilities and spells plays will play out a certain way is a godsend.

Some genius twists to combat further distinguish Runeterra from the pack. Most card games, for example, punish you for not spending all your mana in a given turn. In Legends of Runeterra, however, up to three points of my unspent mana are preserved for the next round to be used exclusively on spells.

This change feels as substantial as The Elder Scrolls: Legends having two separate playing boards. Being able to play cards on a turn where it should be impossible to play them because I stored mana earlier is one obvious benefit, but I also like that I'm not as harshly punished by a bad opening hand. It keeps Legends of Runeterra feeling unpredictable and dynamic, instead of one player snowballing the match due to bad luck.

MOST VALUABLE PLAYERS

By far the most unique part of Legends of Runeterra's combat is the champions. Each of the initial set of 24 is modelled after a character in League of Legends, adapting their playstyle to fit inside the rules of a card game. Braum, for example, regenerates health and gets to choose which enemy unit blocks him, making him a great tank.

Each one also levels up after meeting certain conditions, often gaining more power and new abilities that make them formidable.

When Zed attacks, for example, he creates a shadow clone of himself with the same attack and health that is also attacking. If he or his clone manage to directly hit an opponent twice, Zed levels up so that his shadow clone now also shares any of Zed's special

THE KEYWORD MAKES THE CARD

A run-down of unit abilities and their effects

BARRIER
Negates damage once this round.

CHALLENGER
When attacking, choose your blocker.

DOUBLE ATTACK
Strike twice, with the first hit happening before usual combat.

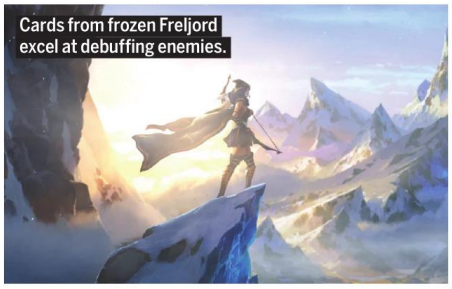
ELUSIVE
Can only be blocked by other Elusive units.

EPHEMERAL
Is destroyed after attacking or at the end of the round.

LAST BREATH
Triggers an effect after dying.

TOUGH
Reduce incoming damage by one.

Knowing when to block is half the battle.
20
20
OPPONENT'S TURN
OneZealot1


Cards from frozen Freljord excel at debuffing enemies.

Drafting has you pick cards in groups.
2 OF 15
CHAMPION PICK
Teemo
Eager Apprentice
Amateur Aeron...
START DRAFTING YOUR DECK
EXIT
RELENTLESS
Katarina
Savage Reckoner
Might
ADD TO DECK
DEATH'S DOOR
Thresh
Soulgorger
Hapless Aristoc...
ADD TO DECK
RETRIBUTION
Lucian
Radiant Guardian
Laurent Duelist
ADD TO DECK
CHAMPS
UNITS
SPELLS

Runeterra's art is beautiful but it's UI stinks.
HOME
PLAY
COLLECTION
REWARDS
STORE
QUESTS
WEEKLY VAULT

Anything that heals you is automatically OP.
LIFESTEAL
Damage this unit deals heals its Nexus that amount.
KINKOU LIFEBLADE
KINKOU LIFEBLADE

keyword abilities, such as his Quick Attack.

Triggering these special abilities is a ton of fun, especially when you fulfil the requirements to level up your champion at the same time. Each one has their own level-up animation that really drives home the idea of these cards transforming into something much more dangerous and powerful. When Darius levels up, for example, he uses his iconic axe to hook the camera and pull it in close. Seeing these flashy animations repeatedly play out again and again does get a little tiresome, but I love how much flair and tension they add to each round.

Even if champions are more powerful than regular followers, they're far from some kind of game-winning trump card. Knowing when to play them and how to keep them alive is key, and it's especially rewarding when you pull it off because you know your opponent is doing everything they can to kill them. With them in play, Runeterra feels like a true battle of wits, each player trying to outsmart the other. It's satisfying as hell to trick an enemy into a position that levels up your champion or destroys theirs.

They also add welcome flavour to well-understood deck types. A control deck loaded with spells that stun and force cards back into your opponent's hand becomes far more sinister when paired with Yasuo, who deals damage to stunned or recalled units. If you pull that trick off six times and level him up, he'll start killing stunned units outright. Even if you're not a big fan of League of Legends, its charming cast of anarchist nutjobs, stoic samurai, and horrifying spectres bring so much life and humour to each battle. I love hearing Jinx laughing maniacally when I use one of her related spells to destroy an enemy unit, or seeing my adorable Lonely Poros transform when I summon another Poro unit. The card art is often so pretty that I frequently sneak a peek using the inspect button during my opponent's turn.

But as nice as the art is, the layout of the main menu and deck builder could use a lot of work. Information is often poorly laid out, forcing me to navigate to menus just to get information I need when trying to build a deck. It's beyond annoying that I have to go to the store window just to see what crafting resources I have, or that there are no better options for sorting and organising my collection of cards.

PACK IT IN

Though its combat is a lot of fun, where Legends of Runeterra sets a new standard is in its economy and rewards. Booster packs are gone entirely – good fuckin' riddance – and replaced with a layering of weekly chests and several free battle passes that constantly dole out crafting materials, cards, and Wildcards, which can be redeemed for any card with a corresponding rarity. Being able to pick which cards I want to add to my collection is refreshing. Though rarer Wildcards come infrequently, I've already built a few decks that feel powerful and highly competitive instead of just cobbling together whatever I can.

Earning the maximum amount of possible rewards each week isn't a brutal grind either. Playing a few hours every day, completing quests and draft modes puts me close to capping my rewards, but I could easily play much less and still reap some rewards. Hardcore players might lament running out of things to do if they invest too much time, but I'm happy that a competitive game from a major publisher, for once, isn't trying to take over my life.

Since launch, I've played in ranked mode almost exclusively. Though I've lost more than I care to admit, I'm motivated to keep playing because fights almost always feel fair. It's one of the less obvious benefits of not being overtly pay-to-win like pretty much any other card game. You can still buy Wildcards, but there's a weekly cap on them, so even hardcore spenders won't outpace us filthy casuals.

It's fantastic. Duels feel like a true test of strategy (and a little luck) instead of who is playing the most expensive meta deck.

Even Legends of Runeterra's draft mode, called Expeditions, is pleasingly generous. Like most draft modes, in order to play you have to spend either a few dollars, spend a draft token you earn from various tasks, or surrender a large sum of crafting resources. But in Runeterra you can play twice per entry, building a new deck each time and then using whichever run was more successful to determine your final rewards. Even if you do terribly, you'll still receive a champion card equal to the value of your admission, but winning all of the seven games showered me with several very rare cards and so many crafting resources that I was immediately able to go back in again for another run.

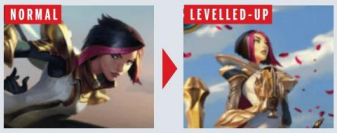
It's exciting to play a card game with so few barriers and so little segregation between its players. And because I don't feel like a filthy, second-class casual for not buying cards, Legends of Runeterra has quickly wormed its way into my daily routine. Though its deck-building menus could use a lot of work, this is a welcome alternative in a genre where how competitive you are is often related directly to how much money you spend.

PC STEVEN MESSNER

FINAL FORM

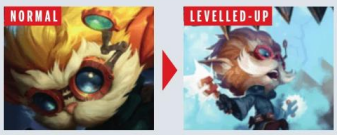
Champions become much stronger upon levelling up. Here's a few examples...

FIORA



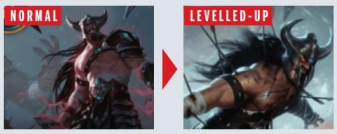
This tricky champion automatically wins the game for you if you can kill enough enemies with her. The key is keeping her alive long enough to do it.

HEIMERDINGER



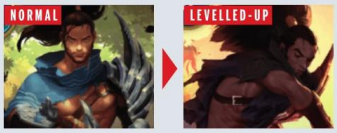
Nice and simple: you cast spells, he gives you mech minions. Cast enough spells and he levels up, making all his mechs stronger.

TRYNDAMERE



Kill this champion, and he comes back angier. His newly beefed up stats and abilities allow you to rush down your opponent's Nexus.

YASUO



Damages any enemy you stun. Do it enough and he levels up, attacking all stunned enemies with his Quick Attack before they can retaliate.

VERDICT:

Several clever innovations and a generous economy make Legends of Runeterra easy to love.

8

Resident Evil 3

A half-baked remake that falls flat in almost every respect.

DEVELOPER CAPCOM • **PUBLISHER** IN-HOUSE
residentevil.com

When I first encountered the Nemesis in Resident Evil 3, a monstrous bio-weapon sent by the Umbrella Corporation to hunt and kill protagonist Jill Valentine, I felt my pulse rise. This towering stack of ugly muscle can move alarmingly fast, snag you with a pair of slimy tentacles, and even use weapons, including a colossal rocket launcher. You can outrun the Tyrant in the Resident Evil 2 remake fairly easily. Wait for a gap to open up, then slip through it. The worst he can really do is give you a firm slap. But running can't save you from the Nemesis.

It stalks you relentlessly through the zombie-ravaged streets of Raccoon City, and always feels one step ahead of you. Seeing something that big and scary move so quickly is really unnerving, and for this first hour or so, I was starting to think this might be the scariest Resident Evil game ever.

At this point I assumed Resident Evil 3 would be one long, tense game of cat and mouse against a dynamic and unpredictable enemy – and I think that's what lots of fans will have been expecting going in. But, sadly, that's far from the case. That first run-in with the Nemesis is not only more scripted than it first appears, but basically a one-off set-piece in disguise. And for the remainder of the game the creature is promptly relegated to cutscenes and pedestrian boss battles, which is deeply disappointing. All the dread built up by that first encounter quickly dissipates.

WHAT IS IT?

A loose remake of Resident Evil 3

DEAD WRONG

Replay that initial meeting with it, and you'll notice that the Nemesis always appears in the same places at the same time, which swiftly shatters the illusion that this is an intelligent killing machine with a mind of its own. It feels like it's always one step ahead of you because it literally is, set to spawn when you reach certain parts of the level. Every time you approach a certain gate, it appears at the top of it – even if it was way behind you just a moment before – which just feels disappointingly clumsy. I wasn't expecting Alien: Isolation levels of reactive AI from Resident Evil 3, but I'd have liked at least something to chew on. It's frustratingly half-baked and so, unfortunately, is the rest of Resident Evil 3.

The streets of Raccoon City have a very different feel from the claustrophobic corridors, polished floors, creepy statues and grand hallways of Resident Evil 2's police station. There are a handful of larger, more open spaces here, connected by alleyways, apartment blocks and sewer tunnels. The city is illuminated by an explosion of neon signs, which make it feel more like Las Vegas than small-town America, but it looks cool. I like that I occasionally find myself using the larger space to reposition zombies, luring them down one staircase to escape up another.

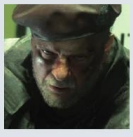
Raccoon City is a nice change of scenery, but it's short-lived. Later environments are dingy and artistically uninspired – particularly the Spencer Memorial Hospital, a location you visit towards the end of the game. Compared to the visually striking, architecturally rich RPD building, this maze of samey corridors and wards is totally forgettable. There's no interesting backstory to uncover, no arcane puzzles to get your head around, no eccentric survivors to meet. And it's somehow less interesting to look at than the hospital in the original game.

Speaking of which, this is a remake of Resident Evil 3 only in the loosest possible sense. The plot, locations, and characters are vaguely similar, but it's a departure in so many other respects that it might as well have been an entirely new game. Whole locations are missing, including the clock tower, even though its exterior features in a

FRIENDLY FIRE *A few of the survivors you'll meet*

DARIO ROSSO

Jill bumps into this paranoid salesman early in the game. Convinced she's infected, he locks himself away in the back of a truck rather than asking for her help, which probably wasn't the smartest move.



MIKHAIL VIKTOR

A senior member of the Umbrella Biohazard Countermeasure Service, or U.B.C.S. After the collapse of the Soviet Union he found success as a mercenary, and work at Umbrella soon followed.

BRAD VICKERS

A member of the Raccoon City Police Department's elite S.T.A.R.S. unit, Brad is a colleague of Jill Valentine. He survived the Mansion Incident in the first *Resident Evil* game, and now the Nemesis is after him.

NICHOLAI GINOVAEF

Another U.B.C.S. member, but a less agreeable one than Mikhail. From the moment you meet him, it's clear he's only out for himself. Jill doesn't trust him, but is forced to form an uneasy alliance.

The Nemesis' hideous new look is a winner, at least.

You get to use new weapons, but they feel limp to fire.

Zombies are just less fun to shoot this time.

Character animation is top notch, but the story is weak.

It'll take more than that to stop this bio-weapon.

Fights with the Nemesis are heavily scripted.

Two playable characters, but only one campaign.

Despite the evocative setting, environments are dull.

Hunters are more grotesque than ever – but not that threatening.

scene. And those sections where the action stops and you have to make story-altering decisions have been cut entirely. I could list more things that didn't make the cut, including the Grave Digger boss, but I'd soon run out of space. It's a shame to see all this left out, especially after the Resident Evil 2 remake strived to include so much.

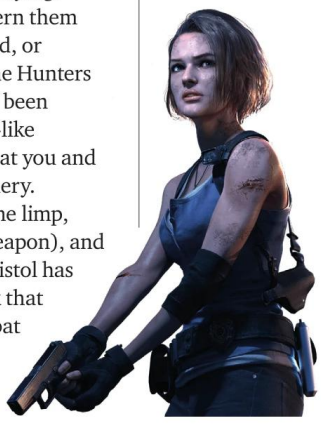
FLAT PLANS

Resident Evil is best when you're lost in a complex, labyrinthine space, forced to make a mental map as you play, unlocking more of the sprawl by solving puzzles and finding curiously located keys. But Resident Evil 3 has hardly any of this, and is actually stiflingly linear. You're frequently funnelled down a prescribed path to the next cutscene, and it doesn't help that the story is lean to the point of nonexistence, with one-dimensional characters and a narrative through-line so flimsy I kept forgetting what I was doing or why.

I do like the way it connects to Resident Evil 2, though. The story takes place 24 hours before Leon and Claire arrive in Raccoon City, and you'll witness events that provide additional backstory to stuff you saw in the previous game – including how Marvin ended up bleeding all over the lobby of the police station. There are a few fun set-pieces in here too, including a fraught, chaotic siege straight out of a classic zombie movie, and a darkly hilarious homage to Raiders of the Lost Ark's boulder chase scene. There are definitely sparks of creativity here, even if they're few and far between.

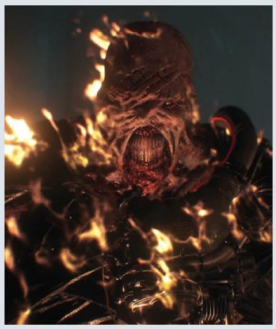
But man, what happened to the combat? One of the most surprising things about the Resident Evil 2 remake was how it made slow, shambling zombies exciting again. Its undead were brilliantly physical and clumsy, tripping over each other, tumbling down stairs, flopping into comical ragdoll heaps. But here they seem strangely disconnected from their surroundings, and shooting them just doesn't feel as satisfying. It's like the physics that govern them have been severely simplified, or removed altogether. Even the Hunters are underwhelming, having been transformed into giant crab-like creatures that leap clumsily at you and constantly clip through scenery.

Zombies hardly react to the limp, rattly assault rifle (a new weapon), and even popping them with a pistol has less of the crunchy feedback that made Resident Evil 2's combat so enjoyable. At least the shotgun still packs a punch. This reduced fidelity may be a trade-off for having more zombies on screen, but it wasn't worth it. You don't even have as many ways to deal with them, thanks to the removal of the system from Resident Evil 2 where you board up windows with planks of wood to manage the flow. Why does a high profile sequel like this have less in it?



TYRANT VS NEMESIS *Battle of the bastards*

TYRANT	NEMESIS
Unpredictable	Heavily scripted
Never speaks	Groans a lot
Slow and lumbering	Terrifyingly fast
Prefers his fists	Can use weapons
No tentacles	Has tentacles
Nice hat	Hatless. Repeat...



> Resident Evil 3 rarely gives you a chance to soak anything in.

CORPSE RUN

There are two playable characters, but only one campaign, and there's no real difference between Carlos and Jill besides the weapons they use. There's no Mercenaries or equivalent. No New Game+ mode. It's an incredibly slight package, and the bundled 4v1 multiplayer mode Resistance – where a player-controlled 'mastermind' lays traps for three other players – isn't good enough to make this worth its hefty price, with stripped-back combat, cramped maps, and repetitive objectives. It's even less replayable than Resident Evil 2 thanks to lack of a remixed alternate campaign, and how heavily scripted the Nemesis sections are. I'll probably never play it again.

And before you know it, it's all over. Resident Evil 3 rarely gives you a chance to soak anything in before it fast-tracks you to the next story beat. There's nothing wrong with a short game, but the pacing here feels off, like it's hurriedly shoving you to the next location just as you're starting to get comfortable – and before its ideas get a chance to fully form.

It's ultimately an extremely shallow game, with lavish production values failing to mask just how rushed and unambitious it feels. This is undeniably a handsome game, at least technically, with detailed, expressive character models and superb lighting throughout. And it plays great on PC too, benefiting from the added precision of being able to aim with the mouse.

After the imaginative, tradition-defying Resident Evil 7, and the sublimely polished, satisfying Resident Evil 2, this is a massive leap backwards for the series. The Nemesis is wasted – a bit-part player in its own game, neutered by its chronic lack of purpose. There are barely any puzzles and you're rarely given the chance to wander off the beaten path. At one point Carlos visits the police station of Resident Evil 2, but you're confined to one tiny section of it, which only highlights just how limited the exploration in this game is. After this section, I just wanted to replay the Resident Evil 2 remake.

Resident Evil 3 is essentially a chain of action set-pieces, threaded together with a paper-thin story and too many cutscenes. This is the direction the series started to take post-Resident Evil 4, when it seriously lost its way and we ended up with the abysmal Resident Evil 6, and I'd hate to see that happen again. I still believe in Resident Evil, and I'm eager for more remakes, but if Capcom falls into the trap of bashing out a lesser game every year, people will lose faith in the series again. Maybe they could develop a remake of this remake a few years down the line? Then the Nemesis might finally get the game it deserves. ■ ANDY KELLY

VERDICT:

Both the Nemesis and Raccoon City are massively underused in this disappointing step back for the series.

6

Lair of the Clockwork God

Hybrid heaven.

DEVELOPER SIZE FIVE GAMES • **PUBLISHER** SIZE FIVE GAMES
sizefivegames.com

Genuinely funny games are a rarity. So without overlooking the ingenuity of a game that fuses point-and-click adventures with platform-puzzlers, the highest praise I can give Lair of the Clockwork God is that it made me laugh from start to finish. Its central pair – alter-egos of creator Dan Marshall and co-writer Ben Ward – would hate the phrase 'interactive comedy', so I'll simply say that this is a gag delivery device with an outstanding hit rate. It opens in a Peruvian jungle, immediately establishing its central hook. While Ben is dedicated to point-and-click conventions, Dan has reinvented himself as an indie platformer hero on an emotional quest. If you haven't played the earlier Ben and Dan games, you could be forgiven for thinking you were in for some self-consciously edgy humour with a side of clever-clever postmodernism. Yet it takes great care to position its leads as the butt of most jokes.

When I say 'emotional quest', that's exactly what it becomes. Ben and Dan wind up in London, where the capital has taken an apocalyptic turn. Here they discover an AI that puts them through a series of experiments, harvesting their response to emotional stimuli to better understand humankind. What follows is an imaginative journey involving plenty of character-swapping fun, as you make use of their disparate skillsets. Dan can reach places his counterpart can't, while Ben can pick up and combine objects to help his friend, creating power-ups such as a double-jump.

There are minor control issues with both. Ben is blighted by an interface that feels slightly fiddly however you play. And while Dan's obstacle courses are creatively designed, he's hardly Celeste's Madeline in precision and responsiveness.

Though it avoids the irritating pixel-hunts of many vintage point-and-clicks, the platforming creates a few sticking points. Giving Ben a piggyback speeds up your movement, but it's possible to pass by environmental features or objects. You're not always confined to a small locality, nor will you always be aware which character you should be controlling. Such moments are rare and dialogue tends to subtly seed hints – though on a few occasions you'll find yourself trying out every possible combination of objects (not that your inventory ever becomes unmanageable).

Several puzzles involve using one character to open the way for the other.

> Its sense of humour might occasionally be too caustic for some, while others might be uneasy at the pot-shots it takes at other games.

WHAT IS IT?

Platformer meets point-and-click in the third (and final?) Ben and Dan game

Somehow, it hardly matters. Dan's glee during the platforming set-pieces is infectious – just witness his response to his discovery of 'left gravity'. And any minor annoyances are quickly forgotten when you're never far from a pun, a one-liner, or a creative sight gag.

THROWING SHADE

Its sense of humour might occasionally be too caustic for some, while others might be uneasy at the pot-shots it takes at other games. Yet the tone is usually either cheeky, affectionate, or both. As often as it takes the piss (sometimes literally), it celebrates the kind of games it's joking about. It doesn't stoop to the usual type of videogame satire, where a game does the very thing it complains about, outside of one sequence that deliberately riffs on that idea, where the payoff is the reveal of the emotion being tested.

Elsewhere, there's a frankly brilliant section that interrogates the process of respawning. One chapter, where the two need to impress a social media feed of youngsters to get into a club, risks devolving into condescending references to young people and their weird lingo, but defies expectations with a self-aware twist. And one elaborately silly joke involves a punchline that's delivered piecemeal within the opening moments of a visual novel, Devil's Kiss, that's bundled with the game.

Surprises are scattered liberally throughout. Some deliberate misinformation prompts an ingenious mechanical twist, and you'll mow down waves of piñata minions with a screen-shaking gun. Yes, a few gags fall wide of the mark. But Size Five's ballsiest adventure to date is the kind of game you'll be quoting for years.

PC CHRIS SCHILLING

VERDICT:

"Not every conspiracy has to be the fucking Templars." If that made you smile, buy with confidence.

8

The Dark Crystal: Age of Resistance Tactics

The story so Thra.

DEVELOPER BONUSXP • **PUBLISHER** EN MASSE ENTERTAINMENT
bit.ly/20swL9e

I love strategy games. I love The Dark Crystal. But heading into this adaptation of the Netflix TV series, I was pretty sceptical of the idea of squishing the two together. It's a pleasure to report that while Age of Resistance: Tactics never fully justifies the combo, it's a far richer and more substantial game than you might expect.

For those unfamiliar, the show (itself spun out from a 1982 cult movie) takes place in a strange fantasy world, represented primarily through puppetry and animatronics, where the peaceful Gelflings are oppressed by the parasitic Skeksis. The game loosely retells this story, with a few new diversions, though in a way jumbled and fleeting enough that anyone who hasn't watched the series will be utterly lost.

With too little explanation for the uninitiated, and not enough new elements to please fans looking for significant additions to the canon, the storytelling falls flat. But where the game shines is in its action.

As you progress across the campaign map, you put together parties of heroes – from a stuffed roster of characters from the show and new additions – to fight in turn-based battles. Thanks to clear presentation and a generous undo button, the strategy is pleasingly accessible, while still boasting plenty of depth to sustain its surprisingly chunky 20-hour runtime.

There are hints of Into the Breach in its mission design (calm down, just hints), with careful positioning and manoeuvring key to success. Attacking from above your opponent confers an attack bonus, encouraging you to fight for the high ground. Environmental hazards, such as pits of snapping Gobbles, damage anyone who stops on top of them – movement and pushing abilities allow you to line up foes and shove them into these dangers.

You fight beasts, Skeksis, Podlings, Arathim, and other Gelflings.

WHAT IS IT?

A turn-based strategy adaptation of the Netflix TV show

FIZZIGIG ECONOMY

Stages get cleverer and more elaborate as you go, showing off a real flair for strategy design. On coastal islands you have to keep an eye on the tide, which may rise to drown hapless fighters, or lower to expose new routes; in the dungeons of the Skeksis, your party is at one point divided along two routes, each having to find and hit levers that open doors for the other; and in the Grottan caves, a stage challenges you to line up boulders and whack them into burrows to stem a tide of beasts, like a giant game of Gelfling snooker.

For a fan of the show, there's a kind of toybox fun to collecting the show's heroes and making them battle. But they do kind of feel like toys, lacking the life of their on-screen puppet counterparts. Partly that's down to the limitations of the medium, but it's also a symptom of a clearly humble budget.

Equally, while the strategy combat is good fun throughout, its relationship to the source material is variable to say the least. A fight against the Chamberlain evokes the show nicely, as he uses honeyed words to confuse your heroes. But representing Brea's search for knowledge as a skirmish against a squad of librarians is awkward at best.

It's not going to rock anyone's world, but for a cheap TV tie-in it's a lot more engaging than it has any right to be, serving as a pleasant opportunity for series fans to spend a few more hours in the company of their favourite Gelflings. PC ROBIN VALENTINE

REBEL ALLIANCE *The party that saw me through to the endgame*

RIAN
Job: Paladin/Grave Dancer
My mobile heavy hitter, able to leap to wherever he's needed most.

DEET
Job: Bramble Sage/ Mender
A magical powerhouse, chucking out heals and fireballs.

NAIA
Job: Stone Warden/ Soldier
A reliable tank who hits hard and gets faster the more damage she takes.

BREA
Job: Song Teller/ Scout
Dispenses buffs to her friends and stuns to her enemies.

POMBO
Job: Musician/ Potion Master
Honestly, I just keep this guy around because his name makes me laugh.

VERDICT:
This Netflix tie-in is an awkward adaptation, but it still makes for a surprisingly smart strategy game.

7

Warcraft III: Reforged

The classic RTS is back, but the Warcraft III: Reforged remaster doesn't live up to its promise.

DEVELOPER BLIZZARD ENTERTAINMENT • **PUBLISHER** BLIZZARD ENTERTAINMENT
playwarcraft3.com

This reborn RTS spins a yarn about a host of factions fighting over the course of several campaigns, and then again in multiplayer battles and skirmishes. But there's also another conflict: the one between 2002 and 2020. This is not the remaster that Warcraft III deserves.

Blizzard hasn't done a great job of communicating what Warcraft III: Reforged actually is. Initially, it sat somewhere between remaster and full-on remake. Not only was Blizzard going to add heaps of new art and modern graphics wizardry, it was going to go over the campaigns again, improving them, tinkering with the pace, and even bringing the lore and story in line with World of Warcraft. There were going to be new cutscenes, a new UI, and more. With the exception of the graphics improvements, Blizzard has walked most of these changes back.

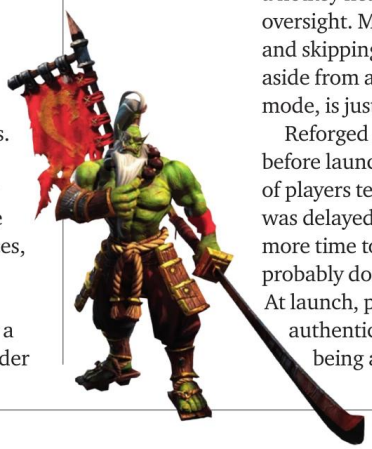
For the purists, this might be good news. It's still the Warcraft III you remember, but it looks a bit nicer. Impressively, two decades hasn't dulled it at all. It helps that real-time strategy hasn't made many leaps since 2002. While it features most of the traditional elements of the genre, like base building, resource gathering, and maps shrouded in a fog of war, it's really driven by its heroes. These super-charged units are fancy specialists with powerful abilities that can be upgraded as they level up and then augmented with items purchased in shops or dropped by enemies. They're RPG characters, essentially, around which you build a small army.

REBUILDING

I've once again fallen down the rabbit hole of obsessing over build orders, taking hastily-written notes and – something I didn't do in 2002 – watching lots of talented players stream their experiments and battles. I want to get good again. I need to do my orc pals proud. With so many factions, monsters, and troops, there are countless ways to build your forces, and that's before you even throw in mercenaries, which you can recruit from neutral buildings, usually after a fight. If you've already got a build order that's tried and tested, you can hop right into Reforged with it and not miss a beat.

WHAT IS IT?

A remaster of the classic RTS



These things don't need changing. The core of Warcraft III is as gripping as it's always been. The most noticeable difference between the original and Reforged is, of course, the art and graphics. Unit models and buildings in particular have benefited from the upgrade. Your warriors are now considerably more detailed and have an aesthetic that mirrors the style of later Blizzard games like World of Warcraft and Heroes of the Storm, though not completely. Reforged still has its own look.

CRAFT WORK

All the Warcraft III campaigns and expansions are available, but after nearly 20 years I'd really like to see what Blizzard can still do with its fantasy RTS. The dialogue and voice acting can be uneven, but this is still the best RTS story out there – sorry, StarCraft fans. It's also one I already know by heart.

Even if you're in the camp who wants everything apart from the graphics to stay the same, you might still be disappointed by other omissions. The massive UI and text that covers the screen are two big pains in the arse, and there are no UI scaling options at all. It looks comically huge. The ability to zoom in is rendered more pointless because of the size of the UI, and you can't zoom out far enough to really see your surroundings. More bizarre is the inability to rebind keys without some external faffing around. This is a hotkey heavy game, so it's a huge oversight. Making a remaster in 2020 and skipping the accessibility options, aside from a new 'story' difficulty mode, is just a bit baffling.

Reforged was in beta for a while before launch, letting a large number of players test the multiplayer, and it was delayed to give the developers more time to polish it. It could have probably done with a bit more time. At launch, players started reporting authentication problems, not being able to make custom games, and plenty of other issues. Some of them seem to have been resolved, while others that have been around since last year remain, like micro-stuttering that can occasionally reach unbearable levels.

Then there are the issues that aren't bug-related. Despite Warcraft III already featuring competitive ladders, Blizzard has yet to introduce them in Reforged at time of writing, which isn't an auspicious start for an RTS looking to revive its esport scene. Clans and automated tournaments are missing, too. Perhaps because it doesn't want the next Dota to slip through its grasp, Blizzard has also changed its custom game policy. If you make a custom game in Warcraft III now, it belongs to Blizzard. It owns the copyright and can do what it wants with it, a policy that looks set to prevent any real resurgence of the original game's thriving map editor community.

There's a long list of disappointments, some of which may be sorted in time, but others we're seemingly stuck with. I still can't shake the itch to play more, though. There's a real dearth of real-time strategy these days, and even with its issues, the core of Warcraft III: Reforged is exceptional.

If you're just interested in the campaigns, which tends to be the case with most RTS players, then you may be more content with what Blizzard has released, even though you'll still encounter some rough edges. This isn't anything like a comeback, however, and with the rough launch and the community seeming to turn against Blizzard after it walked back improvements, I'm not at all confident about its future. PC FRASER BROWN

VERDICT:
Warcraft III: Reforged is an exceptional RTS that is unfortunately let down by this very disappointing remaster.

6

The campaigns remain the best part of the game.

Murlocs remain a force to be reckoned with.

Even with just a handful of units, you can do a lot of damage.

The new character models are, across the board, fantastic.

Doom Eternal

One of the most intense shooters ever made.

DEVELOPER ID SOFTWARE • **PUBLISHER** BETHESDA SOFTWORKS
bethesda.net/game/doom

I just finished Doom Eternal and I'm feeling anxious and exhausted. I've kneed the underside of my desk too many times to count from tensing up. My hands are soft from sweating and my knuckles crack when I try to make a fist. A computer game actually managed to hurt me. Doom Eternal is a celebration of excess. Excess in sin, in violence, scale, speed, and volume. I've never played a shooter this intense and demanding.

Doom Eternal also runs beautifully on a wide range of hardware and feels designed for a mouse and keyboard first. It's a modern classic, with a few caveats. Cheap deaths from getting stuck on geometry happen too often. There are six or seven layers of unnecessary progression. Doom's dark humour has mostly been traded in for deep lore and a high-fantasy cosmology. And the strain from a heavy focus on resource management is felt at every difficulty level. I worry that for some, it could be Doom: But Too Much.

But 'too much' works for me as Eternal's guiding light. The moment-to-moment combat is distilled panic rather than empowerment. I live for the fleeting moments my head gets above water within the hurricane of light and noise and violence, and I pull off a feat of accuracy and reflex I never thought I was capable of.

Doom Eternal is a tough teacher. A few hours in I'm getting by just fine, juggling half a dozen weapons, belching fire on the hordes to spawn armour, tossing grenades at every opportunity to stun and soften up the crowd. I'm dashing in and out of the action for the occasional Glory Kill to keep my health topped up, dodging projectiles and managing the arena, deciding, between breaths (if I remember to breathe) which demons to attack based on who's currently kicking my ass the most.

BULLET HELL

The old gang is back again. Hello, combat shotgun. Hello, plasma rifle. Hello, BFG. With more opportunities to refill ammunition and heaps more arenas with ways to get airborne, the previously under-utilised ballista gets heavy use as a railgun stand-in and stylish airborne demon deletion tool.

WHAT IS IT?

A shooter obsessed with speed and stress

Updated viewmodels reinforce each weapon's heft and sheen, and the gun skins rewarded for completing certain milestones are weird but not unwelcome in a singleplayer game. Refined reload and firing animations imbue each with a sense of mechanical realism, especially the alternate firing modes, which have way more utility this time. But the guns haven't lost the fundamental character they had in Doom 2016. The big changes in Doom Eternal are in how it handles resource management.

Glory Kills still reward health for staggering a demon and finishing them with a special melee kill animation, but chainsaw kills, which drop ammo, are far more important for keeping your guns fed. Burning through every bullet takes little time. Throw in the flame belch, a tool that lights demons on fire to make them puke up armour for a bit, and suddenly half of each fight becomes about juggling resources.

RUNE MATES

Also on the pile of new stuff to digest: a lot of progression systems. Weapon points, runes, secrets, sentinel batteries, suit upgrades, challenges, weapon mods, skins, weapon mod upgrades, weapon mastery upgrades – it's a lot. Too much, really, because Eternal places the bulk of these upgrades along the critical path. By the end I had almost every upgrade and without trying too hard to find them all, as if it's all an elaborate front built to make players feel good while ensuring they stay at pace with the steep difficulty curve.

The ability to climb certain walls, dash in midair, and swing from monkey bars makes for some challenging navigation sequences, but I wanted to spend more time soaking in Eternal's incredible settings rather than dashing my way through them.

The new forms of mobility do shine in the arena, though, especially with how these fights scale up so quickly. It hits Doom 2016 endgame stuff from pretty early on, and then surpasses that benchmark, adding tougher demons and even more waves and wild configurations of them, and then surpasses that mark again and again. The dash is essential for dodging projectiles, but even more so for map awareness. Dashing out of the fray and to a decent vantage point gets you a split second to see what you're up against, and any chance to prioritise a target makes a big difference.

SHOOTER HEAVEN

If there was any downtime in Doom Eternal, it was because I stopped between fights to soak in the scale and majesty of its vistas. Demons as tall as skyscrapers carrying hell barges around on their backs, swarms of dozens of cacodemons like gnats in the distance, ancient sentinel castles climbing mossy mountains into the clouds – Doom is a full on high-fantasy world now, pages and pages of optional lore included.

Some of the humour is dulled as a result, but I still laugh every time I hear the pop of a cacodemon's eye getting ripped from the socket. Besides, Doom taking itself this seriously feels like a joke of its own.

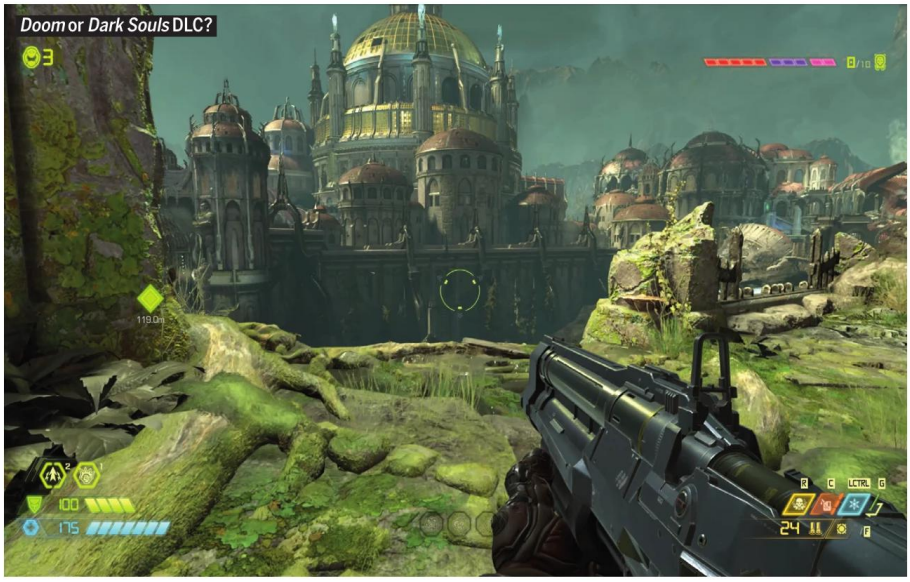
Doom Eternal is one of the most demanding arena shooters I've ever played, a game that hones every muscle memory committed to my right forearm and left hand fingertips since they graced a mouse and keyboard. It's bright and loud, hyper violent yet tastefully refined, and absolutely draining. I can't recall playing a shooter where sensory overload was one of the most common reasons for death. PC

JAMES DAVENPORT

VERDICT:

A ceaseless, panicked nightmare that pushes you to point-and-click with more skill and style than ever before.

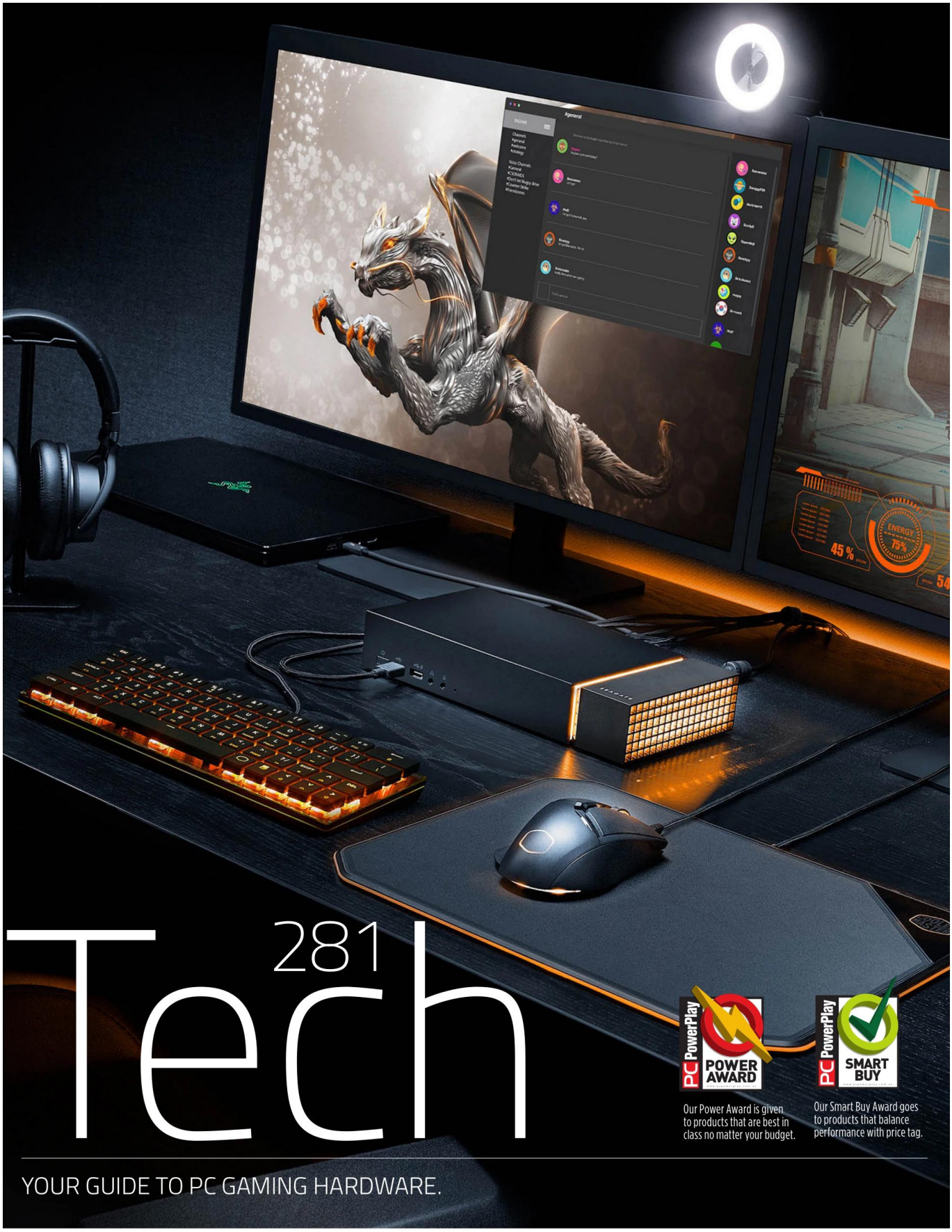
9


Doom or *Dark Souls* DLC?

Looks like my kindergarten school photo.

Do I have something in my eye?

Plasma rounds take down the Doom Hunter's candy shell.



281 Tech

YOUR GUIDE TO PC GAMING HARDWARE.

PC PowerPlay POWER AWARD

Our Power Award is given to products that are best in class no matter your budget.

PC PowerPlay SMART BUY

Our Smart Buy Award goes to products that balance performance with price tag.

GEAR THIS ISSUE

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THE PCPP TESTBENCH

CPU INTEL I7 7700K *intel.com.au*
MOBO ASUS Z270 ROG CROSSHAIR VI HERO *asus.com.au*
RAM 2 X BALLISTIX 8GB DDR4-3200 *crucial.com*
PSU CORSAIR 850W PSU *corsair.com*
COOLING H105 CORSAIR COOLER *www.corsair.com.au*

GAMING LAPTOP

Aorus 17

The new Aorus 17 is trying to change the framing of professional gaming laptops, by making them much faster.

PRICE From $4,299
aorus.com

Aorus is Gigabyte's premium gaming brand and the Aorus 17 is the biggest and most powerful gaming laptop the company makes. This weapon can be fitted with an Intel Core i9-9980HK CPU, 32GB of RAM and a Nvidia GeForce GTX 2080 GPU if you go all out. But even the entry level Aorus 17 XA comes with an Intel Core i7-9750H CPU, 16GB of RAM, and a GTX 2070 GPU, which is more than enough for some fast paced Full HD gaming. High refresh rate, low latency screens are starting to become more accessible, and the advantages for competitive gamers is becoming more apparent. So it is an excellent time for Aorus to have introduced a 240Hz panel to its most premium device. The 17.3-inch FHD panel from AUO is one of the fastest refresh rates available, but interestingly its response time was 3ms, a little behind the 1ms you get from the highest performing professional gamer screens.

Both the Aorus 17 XA and the Aorus 17 YA have more than enough grunt to get games up and running fast enough to make the most of a 240Hz panel, though you are obviously likely to see a lot better results form the higher specced Aorus 17 YA. We tested the higher powered unit in this review and was able to get demanding modern games like The Division 2 running at 91 frames per second using Full HD Ultra graphical settings. At this pace you are definitely going to see some benefits form the faster screen, but studies done by Nvidia have shown that your performance will continue to improve significantly if you push your screen to run up to (and even over) 144fps. Even with the Aorus 17 XA and its RTX 2080 GPU, you're probably going to need to compromise on some graphical settings in order to crank the screen up over 144fps on any real looking first person shooter titles.

The Aorus 17 XA with a GTX 2070 will set you back around $3299, while the 2080 wielding Aorus 17 YA costs either $4299 or $5399 depending on whether you get an i7 or an i9 CPU. These premium price tags mean that these devices come with some desirable features including a full sized, Omron mechanical switch keyboard, AI hardware acceleration software and either a 512GB or a 1TB PCIe 3000/1500MB/s internal SSD. There's also independent Xrite Pantone certification for colour precision of Delta E less than one (which means you'll have a colour profile with extremely precise colour reproduction) and you have top of the line Killer Ethernet 2600 and Wi-Fi 6 AX1650 network connectivity.

The 94Wh battery has a pretty standard 2 hours and 23 minutes battery life in PCMark Home battery benchmarks. While the i9-9980HK is a extremely powerful 2.4-5GHz CPU the Aorus 17 managed to keep it under 100 degrees at all times across our testing. The unit was outperformed by an overclocked MSI GT76 Titan, but if you wanted to tweak CPU performance you can push this chip a little further. CHRIS SZEWCZYK PC

+
- A stunningly good display
- Mechanical keeyboard
- Works for pros, too

-
- Not strong on battery life

VERDICT: The ultra-fast screen is a welcome addition to the most powerful 17 inch Aorus money can buy.

8

Indictaes Best Result

	PCMark 8 - Home (score)	GeekBench 4 - Single Core	Cinebench R20 - multi-threaded CPU	3DMark Time Spy (score)	The Division 2 - Ultra 1080p (fps Av.)	Total War: Warhammer II - Ultra 1080p (fps Av.)	CrystalDiskMark Read/Write (MB/s)
Aorus 17	4665	5818	3091	9,045	91	89.3	2919.2/1533.4
MSI GT76 Titan DT95G	3768	6111	4910	9,304	81	98.8	3208.5/3004.5

GROUP TEST

MICROPHONES

Sound your best with the finest microphones for streaming, podcasting, and gaming.

By Jorge Jimenez

For serious streamers, there's nothing worse than not being heard during your broadcast. Your microphone tends to be the unsung hero of your entire streaming arsenal.

When choosing the best microphon, there's one thing we look for above all else: can you be heard loudly and clearly?

Whether you're looking to start a podcast with your buddy where you rank MCU movies, or doing a retro games stream, USB microphones are becoming more and more popular.

Figuring out which mic is best for you comes down to how you're planning on using it. XLR mics offer the best studio-quality sound, but are very pricey. USB mics, on the other hand, are easier to set-up, a lot cheaper, and play well with most audio software. Also, note the microphone's polar patterns, as this is the easiest way to figure out what the best use is. Common polar patterns include:

Cardioid: The most important. Records in front of the microphone. Perfect for vocals and streaming.

Bidirectional: Captures audio in front of and behind the mic. Ideal for one-on-one interviews.

Omnidirectional: Picks up sound from every direction, for those round-table discussion programmes.

Stereo: Perfect for ASMR recordings. Search YouTube for 'ASMR' if you want an example, as it doesn't come off well in print...

Now you know all that, you're almost ready to get started.

HOW WE TEST

Audio quality isn't everything, but it's still the most important factor when testing a microphone. The point is, after all, to find a mic that makes you sound good.

We test the microphones in multiple setups and with different settings, though primarily with the 'cardioid' recording pattern when available.

Everyone's setup requirements are different, so a mic must perform well under a handful of different scenarios.

You need a mic that sounds great under any circumstance and can adapt to them, however, you need to use it so you can play your games comfortably and still sound great on your stream.

The form factor is also something that matters. In the case of a standing mic, you'll be staring at it every time you are sitting at your desk – and attachable mics need to make sure they aren't too distracting.

A mic's form factor can also play a role in how adaptable it is, as you'll need to make space for it. We used every mic in multiple settings with different PCs, keyboards and monitors, getting a feel for how they looked and performed in each environment.

As a streamer, your mic will also be in view for your audience, so its appearance will be relevant.

Finally, the price is an essential factor when looking at how good a particular mic is. Price is vital in comparing what one option can offer over another.

Yeti X

BLUE $298

The best USB microphone for streaming

1 The Blue Yeti X is a hybrid model of the Nano and the original Yeti (see over page). This sturdy microphone has an LED-lit front panel that monitors your volume levels at a glance and the sound quality remains top-notch. If you're choosing between this and the original Yeti, the Yeti X has four condenser mic capsules as opposed to the original's three. The Yeti X also offers a wider array of customisation options and adjustments you can make with the new smart knob.

The biggest and perhaps most useful change comes in the form of Yeti X's Blue Vo!ce software via G Hub. Here you can add preset filters to your voice to make yourself sound like a chatty AM host or something crisper and more modern. It's even got a toggle for noise reduction in case your recordings are plagued with the sound of a fan. The Yeti X is the best non-XLR microphone you can pick up for under $300.

VERDICT

- ⊕ Best sounding Blue microphone
- ⊕ LED front panel
- ⊖ MicroUSB
- ⊖ Buttons too noisy

SPECS POWER: 5V / **POLAR PATTERNS:** CARDIOID, BIDIRECTIONAL, OMNIDIRECTIONAL, STEREO / **CONNECTIVITY:** USB / **FREQUENCY RESPONSE:** 20HZ-20,000HZ / **FEATURES:** BLUE VO!CE, ZERO-LATENCY MONITORING, SMART KNOB

Quadcast

HYPERX $189

Excellent sound quality for the money

2 HyperX's gamer-centric Quadcast is excellent value for the streamer looking for an easy-to-use clear sounding microphone.

Its cardioid pattern works well to bring out the subtle details of your voice without drawing in background noise. There's a clarity to the high end that we found really commendable at this price point. A note for mechanical keyboard users though: the Quadcast will pick up the clicks, so it's worth running your signal through a noise suppressor.

The built-in shock mount is reason enough to pick up this mic. Decent shock mounts usually go for around $100 and help prevent the microphone from picking up any accidental bumps and thuds during streaming. Another addition is the touch-sensitive mute button. Often, buttons and switches make a loud click when trying to record, and this is a thoughtful solution for that common issue. The Quadcast hits the sweet spot of price, sound and features, and the mount seals the deal.

VERDICT

- ⊕ Easy to set up and use
- ⊕ Touch-sensitive mute button
- ⊕ Built-in Shockmount
- ⊖ Best sound requires adjustments

SPECS POWER: 5V / **POLAR PATTERNS:** CARDIOID, BIDIRECTIONAL, OMNIDIRECTIONAL, STEREO / **CONNECTIVITY:** USB / **FREQUENCY RESPONSE:** 20HZ-20,000HZ / **FEATURES:** BUILT-IN SHOCKMOUNT

"IF YOU'RE ON THE TALLER SIDE, YOU MAY END UP HUNCHING OVER YOUR DESK TO SPEAK INTO THE MICROPHONE"

3

Yeti Nano

BLUE $158

A good choice for beginners

This miniature version of the classic Blue Yeti is perfect for those just starting out with streaming; it has great sound-quality, while its diminutive size and lightweight metal build make it easy to transport (this is at least 40 per cent smaller than its cousin).

The difference its 24bit / 48khz recording sample rates make is noticeable, too; putting audio from the Nano and original Yeti side by side reveals that the former is superior by quite a margin. It's only got two polar patterns, sure (cardioid and omnidirectional), but the Yeti Nano more than makes up for it.

As you've probably guessed already, the Blue Yeti Nano is small – that means if you're on the taller side, you may end up hunching over your desk to speak into the microphone, which we can't imagine will be comfortable for long periods of time.

You also might want to invest in a pop shield – a small mesh screen you place between your mouth and the microphone – as it is quite sensitive to pops.

VERDICT

- ⊕ Very small and light
- ⊕ Easy to use
- ⊕ Great sound-quality
- ⊖ Not as many polar patterns as others

SPECS POWER: 5V / **POLAR PATTERNS:** CARDIOID, OMNIDIRECTIONAL / **CONNECTIVITY:** USB / **FREQUENCY RESPONSE:** 20HZ-20,000HZ / **FEATURES:** 48KHZ SAMPLE RATE, ZERO-LATENCY MONITORING, MUTE & HEADPHONE VOLUME CONTROL

NT USB

RODE $209

A fine, professional-looking mic

4

Rode's NT USB screams 'professional'. Mimicking the look of studio microphones at a reasonable cost, this is a good choice for users who want to take their hobby further. Its sound quality goes above and beyond the competition, and the inclusion of a free pop shield is appreciated.

It may only have one polar pattern – cardioid – and some odd design choices such as the smooth knobs, but this remains a top option for voiceover and streaming specialists.

The NT USB delivers fantastic audio. It's perhaps the best standard of sound we've heard from a USB microphone. It's got a talent for filtering out background noise as well; when using it in our busy office, chatter was reduced to a murmur that never distracted from the recording. Even with the subject a short distance away, or behind a computer, the NT-USB performs admirably. This brilliant audio quality trumps the competition in almost every regard, and the inclusion of a pop filter definitely helps.

VERDICT

- ⊕ Fantastic audio
- ⊕ Free pop filter
- ⊖ Only one polar pattern
- ⊖ Unsteady tripod

SPECS POWER: 5V / **POLAR PATTERNS:** CARDIOID / **CONNECTIVITY:** USB / **FREQUENCY RESPONSE:** 20HZ-20,000HZ / **FEATURES:** SIDE-ADDRESS, ON-MIC MIX CONTROL, POP SHIELD, TRIPOD, ZERO-LATENCY STEREO HEADPHONE MONITORING

4

5

6

Yeti USB

BLUE $175

An oldie but a goodie, with plenty of options

5 The quintessential microphone for streaming and amateur recording, the Yeti more than earns its success. Affordable, versatile, and easy to set up, this has become something of a gold standard by which every other mic is judged. That's because the Yeti excels in almost every way. It has clear, high-quality audio. Straightforward controls that ensure that it's easy to adjust. A streamlined, sturdy design that makes it likely to survive a fall. And the four polar patterns mean that it's adaptable.

The Yeti's quality was clear and full in every test we gave its multiple patterns, though you may want to invest in a pop shield for the best possible results. Its omnidirectional mode captured a room full of chatting people clearly and loudly, the cardioid and bidirectional patterns were pleasingly precise (although you'll need to lean close to the mic to get the best from them), and its stereo pattern is perfect for podcasting, neatly separating multiple voices.

VERDICT

- ⊕ Very adaptable
- ⊕ Multiple polar patterns
- ⊖ Foam base padding ineffective
- ⊖ Will pick up keyboard clicks

SPECS POWER: 5V / **POLAR PATTERNS:** CARDIOID, BIDIRECTIONAL, OMNIDIRECTIONAL, STEREO / **CONNECTIVITY:** USB / **FREQUENCY RESPONSE:** 20HZ-20,000HZ / **FEATURES:** ZERO-LATENCY MONITORING, GAIN, MUTE & HEADPHONE VOLUME

Seiren X

RAZER $159

The best compact and portable microphone

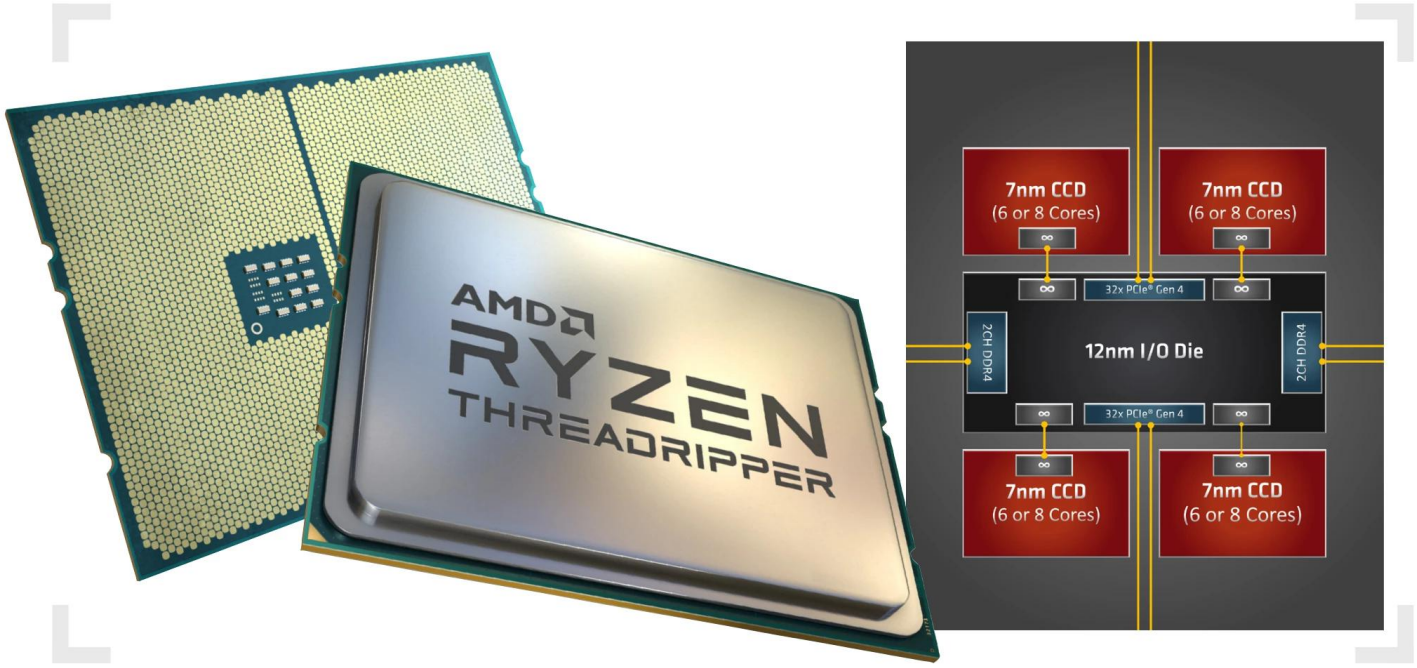
6 Half the size of the original Seiren, and just as good, the Seiren X is designed with portability in mind – it stands on your desk like a can of Red Bull. The built-in shock mount works well to absorb unwanted spikes from desk kicks and the like, while a volume control and mute button are the only controls.

There are a couple of minor downsides, inevitably. Like the Blue Yeti we found that this mic picks up a noticeable amount of ambient noise like the dreaded mechanical keyboard clatter. It's not enough to prevent it from being a feasible streaming mic, but we'd hoped for better noise-cancelling from Razer given its super-cardioid polar pattern. This is a tighter pickup area than the traditional cardioid, the idea being that the Seiren X picks up what you want it to – your voice – while falling deaf to background noises. Recording quality is high, as is the quality of finish, and it offers a sensible and very usable compromise between full-size gaming mics and headsets.

VERDICT

- ⊕ Portable
- ⊕ Great clarity
- ⊖ Just one polar pattern
- ⊖ Picks up some background noise

SPECS POWER: 5V / **POLAR PATTERNS:** SUPER-CARDIOID / **CONNECTIVITY:** USB / **FREQUENCY RESPONSE:** 20HZ-20,000HZ / **FEATURES:** BUILT-IN SHOCK MOUNT, MUTE BUTTON, ZERO-LATENCY 3.5 MM HEADPHONE MONITORING



CPU

AMD Ryzen Threadripper 3990X

Say hello to the most powerful desktop processor ever.

PRICE $6,499
www.amd.com

AMD has been going from strength to strength with successive iterations of its Zen architecture, most recently culminating in the ultra-high end Threadripper 3-series. The entry level 24-core 3960X we reviewed last month decimated Intel's entire HEDT lineup, and by some margin. The 3970X 32 model is equally impressive. But, the best was yet to come. Hidden away inside a press deck was a tease of the 3990X, a 64 core flagship behemoth that teased unprecedented levels of parallel computational power. It introduces a completely new paradigm to the consumer marketplace. So powerful is the 3990X, it may be too much processor for consumer level software to handle. Or is it? Let's see what this monstrous CPU can do.

FITTING THEM ALL IN

The basic topology of the 3990X is carried over from its siblings. The 3990X contains no less than nine chiplets which consist of eight 8-core complexes, each of which packs in 32MB of L3 cache, for a total of 256MB. The core complexes (or CCDs) are built on the 7nm process, which is a major reason why such a dense design can be packed into a relatively small package. The CCDs are joined by a central I/O die which is built with the older 12nm process. Overall the CPU packs in over 33 billion transistors. It's a stunning feat of engineering when you consider that Intel, with all its R&D budget, will be using 14nm monolithic dies for the foreseeable future.

The 3990X operates at a base frequency of 2.9GHz but can boost up to 4.3GHz when thermal and power conditions allow it. You also get 64 PCIe 4.0 lanes, which when combined with those available from the TRX40 chipset, brings it to a total of 72 lanes. All the TRX40 boards seen to date have been especially feature rich. The 3990X supports quad channel memory with up to 256 GB possible over 8 slots.

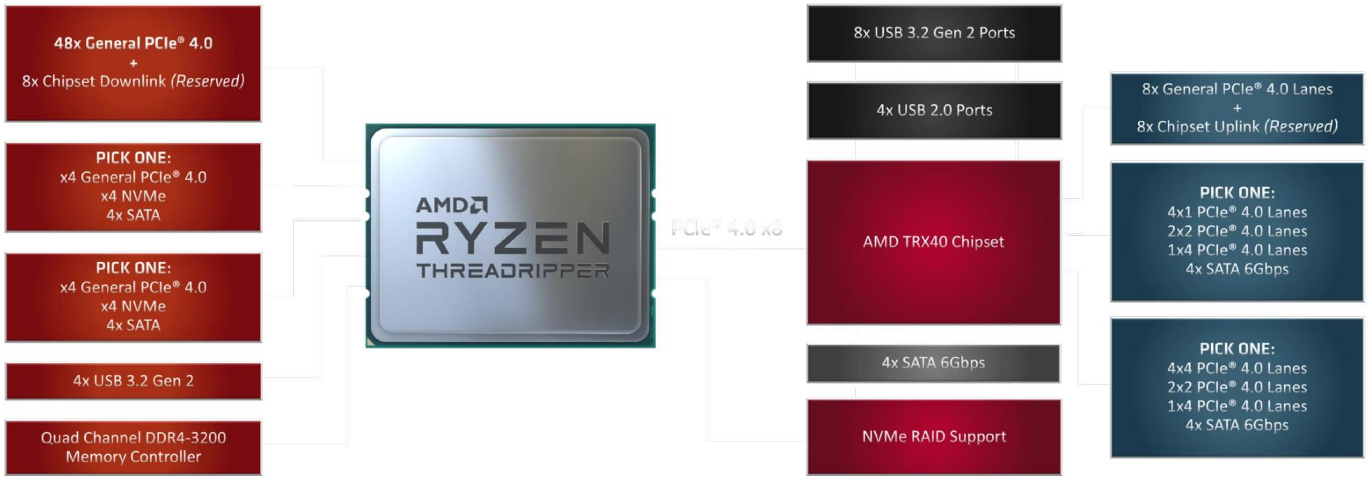
> The 3990X operates at a base frequency of 2.9GHz but can boost up to 4.3GHz when thermal and power conditions allow it.

WHAT IT'S GOOD FOR – AND NOT

At $6,499, the 3990X CPU is a very expensive CPU, and that means you've got every right to expect top level performance to match its price tag. As the 3990X is a desktop CPU, we won't go and

Indicates Best Result

	Cinebench 20	Cinebench 20	Blender 2.79 BMW Render	7Zip	POV-Ray	CPU-Z
	Multi thread Score	Single thread Score	Time (seconds) Lower is better	Million Instruction per second	Ray Tracing - Pixels Per Second	Multi Thread Score
Intel Core i9-9900K	4,948	511	217.3	53,617	4,293	5,581
AMD Ryzen 9 3950X	9,201	526	124.0	99,450	7,893	11,118
Intel Core i9-10980XE	8,813	465	137.8	101,682	7,384	10,530
AMD Ryzen Threadripper 3960X	13,644	516	85.6	157,027	11,207	16,599
AMD Ryzen Threadripper 3990X	24,813	494	47.9	187,016	13,446	32,909



compare it to enterprise EPYC or Xeon Platinum CPUs, though as you'd expect, testing like this leaves the 3990X in a mostly lonely position atop many of the benchmark charts. But, and this is a very big but, the 3990X is simply too good.

That big 'but' is that a lot of software doesn't perform too well on the 3990X. Even the much cheaper AM4 3950X or 9900K show it a clean pair of heels in workloads that aren't specifically coded to recognise, let alone take advantage of it. There are many reasons for this. When you consider that most users are using processors with 4 or 8 threads, this isn't a surprise. It takes a lot of effort to produce a piece of software that scales to anywhere near 128 threads. The 3990X is simply way ahead of the curve. Just a year ago, a 32-core desktop CPU like the 2990WX was unprecedented. Add in other potential issues such as sub-optimal Windows thread allocation, lower boost clocks and a lack of multi-chip-module topology awareness and it's easy to reach the conclusion that the 3990X is far from a jack of all trades CPU. You can always disable a bunch of the cores with the Ryzen Master software, but doing that partly defeats the purpose of owning the 3990X in the first place.

With software that does support such a massive number of threads, the results are extraordinary. It's amazing to see the 3990X up to 3x as fast as Intel's 18-core 10980 XE and up to five times as fast as a 9900K. It's simply not a fair fight when it comes to properly supported multithreading.

The level to which Windows supports the 3990X is somewhat up in the air as we write this article. We didn't find any apparent issue, with our Windows Professional installation recognising all 128 threads as a 1P system, but then it's necessary to compare Windows results to Linux results to be sure. Linux has extensive roots in the enterprise space and has much better high core count awareness.

POWER AND EFFICIENCY

A 64-core processor is bound to be a difficult beast to tame. Idle temperatures in the mid 30s and all core load in the high 70s with our 360mm NZXT Kraken X73 are pretty good, but temperatures tend to jump around quite a bit as different dies see different loads. Investing the time into an appropriate custom fan curve is advised in order to get rid of constant rises and falls in fan speed. AMD deserves credit for engineering 64 cores to run within a 280W power envelope. It also means that per core power efficiency is simply amazing. The 3990X is also multiplier unlocked, though with the unique power demands and cooling requirements of a 64 core chip, overclocking of this CPU is really not recommended unless you have absolutely top shelf custom watercooling. If plan to OC or even simply enable PBO, be prepared to see power and temperature levels rise dramatically.

The Threadripper 3990X is simply a monster of a CPU, but we recommend it only if you have highly parallel workloads that can make us of its power. A prosumer or ultra-enthusiast will be better served by the likes of a 3970X or 3960X. If you're a professional who renders, data mines, compiles, prototypes, encodes or runs a load of virtual machines, you'll already know if the 3990X is right for you. Time is money if you can deliver your completed project that much faster. Feed the 3990X the right work and you'll be rewarded with unprecedented performance. For the rest of us? Come back in a couple of years when the software has caught up. With 6- and 8-core processors only now going mainstream. It's going to be a long time before a 64 core processor is truly beneficial for an enthusiast, let alone the average consumer. Still, we love the 3990X and it's a technological statement par excellence.

CHRIS SZEWCZYK PC

+
- More power than God
- ALL the PCIe lanes

-
- Not many apps can take advantage
- Ludicrous price

VERDICT: **Easily the most power desktop processor ever, though it's highly conditional on the workloads you feed it.**

10

	CPU-Z	Handbrake Video Encoding	3DMark TimeSpy	Time Spy Extreme Physics	Ghost Recon: Wildlands	Middle Earth: Shadow Of War
	Single Thread Score	FPS (Higher is better)	Score	Score	1080p, Low, Avg FPS	1080p, Lowest Preset, Avg FPS
Intel Core i9-9900K	578	51.4	13,560	5,106	204	252
AMD Ryzen 9 3950X	553	71.1	13,868	8,428	195	219
Intel Core i9-10980XE	553	66.3	13,600	8,649	203	216
AMD Ryzen Threadripper 3960X	533	89.9	13,222	12,862	195	202
AMD Ryzen Threadripper 3990X	527	65.5	11,910	13,968	174	215

GAMING HEADSET

HyperX Cloud Flight S

Expensive, but mostly a joy to use.

PRICE $349
www.hyperxgaming.com

The Cloud Flight S is somewhat similar to the original Cloud Flight, although not as much as the names might suggest. Whereas the earlier model featured striated ear cups, red highlights and loose wires in the headband, the Cloud Flight S is a much more low-key, elegant device. It's almost all black plastic, with an adjustable, notched headband and a white "HX" logo on either ear cup.

The left ear cup is where most of the special features live, including a detachable, flexible mic, a power button, a 7.1 surround sound button and a micro-USB charging port. But what's more interesting are the four circular indentations that dot the left ear cup like directions on a compass rose. You can program these buttons to do almost anything, but by default, they control game/chat balance, as well as mic muting and sidetone. These are one of my favorite parts of the Cloud Flight S, as they give you lots of options without being obtrusive in the slightest.

On the right ear cup, there's a volume dial, and that's it. It's well-placed, and easy to find without looking.

Thanks to its plush ear cups and padded headbands, I found the Cloud Flight S extremely comfortable to wear for hours at a time. While rigid, unnumbered notches aren't my favorite way to adjust a headset, I quickly found a good fit, and didn't have to mess around with the sizing again until I handed the device to a co-worker.

I ran the Cloud Flight S through a variety of games on the PC and PS4, including Overwatch, Age of Empires II: Definitive Edition, Shadow of the Tomb Raider and World of Warcraft. In every case, the soundscape was robust and nuanced, from the impassioned pleas of Lara Croft's friends, to the shots fired from Ashe's shotgun, to the clanks of armor at a medieval blacksmith.

HyperX has also optimised surround sound for a number of games. Most games are developed with stereo sound, and 7.1 surround sound doesn't do them any particular favors. As such, HyperX has developed algorithms for improved surround sound with games such as Apex Legends, Fortnite and Overwatch. I didn't think these options provided much better experiences than traditional stereo sound, but it's a good option to have, at least.

Like a lot of other HyperX gear, the Cloud Flight S runs on the HyperX NGenuity software. This software is profoundly OK, combining a bare-bones interface with a number of useful features.

Then there's the wireless charging, which does work, although less smoothly than I would have liked. HyperX claims that the Cloud Flight S works with any Qi charger, but in practice, it was quite difficult to activate. Wireless chargers from Nimble, Google and Mophie did not work at all — a charging pad from Cooler Master finally worked, only after extensive finagling. Naturally, HyperX's own ChargePlay Base ($60) worked just fine, but that's the price of a brand-new game. I contacted HyperX about these issues, but the company was not exactly sure why some chargers would work, whereas others wouldn't. MARSHALL HONOROF PC

+
- Comfortable fit
- Good sound for games and music
- Convenient wireless features
- Handy ear-cup buttons

-
- Touchy wireless charging
- Inconsistent mic

VERDICT: **The HyperX Cloud Flight S is mostly a joy to use, and well worth the admittedly high asking price.**

8

DAC

Creative Sound Blaster X3

The Creative Sound Blaster X3 tries to tackle multiple audio concerns at the same time.

PRICE $229
au.creative.com

Chances are, your Windows PC or Mac speakers come with middling, if not terrible audio quality. Or maybe they're decent, but not quite good enough to truly enjoy what the music or games you spend time listening to.

Cue the Creative Sound Blaster X3, a USB DAC (digital-to-analog converter) with a headphone amplifier that can produce virtual 7.1 surround sound, and offers a variety of ways to enhance the audio coming out of your computer or game console.

It's like an external sound card that's compatible with PS4, PC and Mac and has the added bonus of harboring SXFI, Creative's audio technology that simulates 3D sound in a pair of stereo headphones.

Creative found a way to keep things simple, yet provide different avenues to pursue all at once. The primary input is the large knob in the middle that controls a couple of different things, depending on setup. The three buttons laid out in front of it mute the microphone, change audio modes and toggle Super X-Fi on or off.

On the rear, there are no less than seven ports. USB-C is the power port, whereas the rest are all about audio variety. The Toslink optical output is there if you want to set up your TV or game console that way. A 3.5mm line-in port is perhaps the easiest and most common of them all. Then you have four line-outs for sound systems.

We didn't find the Sound Blaster X3 difficult to set up, though we should also note that there are several different configurations and settings to note. You also need Creative's Sound Blaster Command app on iOS or Android to help facilitate some of the features, especially Super X-Fi. For example, if you've never used Super X-Fi before, you would need to download that app to map your face and ears and create a personalised audio profile. If you already have a profile, it's easy to link it to the Sound Blaster Command app, which then applies it to the X3.

From an audio perspective, the X3 can handle up to 32-bit at 192KHz, putting it above just about any pair of headphones you probably own (audiophile gear, notwithstanding). The amplifier inside is a nod to more discerning audio listeners, where Creative says the DAC and Super X-Fi are able to push out great sound to them.

We like Super X-Fi for the simple reason that it makes audio sound like nothing else does. Everything resonates and the wider soundstage is easy to appreciate. Sure, there is extra reverb that does sometimes make a studio track sound like it's live, but we dig it anyway. Mind you, that's not necessarily Creative's intention. They want to emulate what a room sounds like, not a concert hall, and in that regard, we would say that results are entirely subjective.

TED KRITSONIS PC

> "It's like an external sound card that's compatible with PS4, PC and Mac."

+
- Easy to set up
- Boosts any pair of headphones
- Lots of options

-
- Some may not appreciated the room-like reverb

VERDICT: **Creative delivers a bevy of different sound options worth listening to with its latest external sound card that's worth it if you're tired of bad-sounding computer speakers.**

8

SSD

Seagate FireCuda 520 1TB NVMe SSD

Seagate's fastest SSD yet.

PRICE $429
www.seagate.com

PCIe 4.0 SSDs have been trickling onto the market ever since the launch of AMD's X570 platform, though they remain very much enthusiast- and prosumer-oriented drives, at least until we see budget chipset support and particularly support on Intel platforms. Seagate is the biggest company yet to jump aboard the PCIe 4.0 train with its FireCuda 520 series SSD and its specifications look very tasty indeed, easily faster than the best PCIe 3.0 drives. At $429 for the 1TB model, it's definitely on the pricey side though. Is all the raw speed worth it?

The Seagate FireCuda 520 is a standard form factor M.2 2280 (80mm length) NVMe drive. In something that's rare among PCIe 4.0 drives, the FireCuda 520 doesn't come with a heatsink. This might seem like an oversight, but with almost all X570 and TRX40 motherboards coming with some form of integrated chipset and M.2 cooling, this actually makes perfect sense. Why include a cost adding heatsink when most people will just remove it anyway?

It's equipped with Phison's commonly utilised PCIe 4.0 PS5016-E16 controller. It comes with 96-layer TLC NAND flash memory and a DDR4 DRAM cache. These specs are roughly equivalent to other PCIe 4.0 drives on the market right now. The 1TB FireCuda 520 comes with an endurance rating of 1800 terabytes written, which is very good indeed. Seagate is obviously confident in the reliability of its 520 series. It also comes with a five-year warranty.

As one of the world's leading storage manufacturers, Seagate's Seatools utility is highly regarded. It includes S.M.A.R.T. reporting, monitoring and firmware updating capability. You also have the option of downloading Seagate's DiskWizard cloning software.

When it comes to performance, the FireCuda 520 delivered some of the best performance we've seen from any NVMe drive, with the exception of some of the Optane drives which are admittedly more expensive. Straight transfer rates are faster than any PCIe 3.0 drive on the market. Its random read and write performance is also stellar. With its onboard DRAM cache, most users should see the drive's full performance unless you really thrash it constantly, which is unlikely on a consumer level drive.

The Seagate FireCuda is a very strong contender from Seagate, though we're yet to see entrants from big players such as Samsung or Intel. The FireCuda's biggest competition comes from the likes of the Corsair MP600 and Aorus Gen 4 SSD's which can be had for slightly cheaper. They're all fairly similar in specification and performance. Which one you choose may come down to whether you need a heatsink or not.

If you're after one of the fastest SSD's on the market, and have a PCIe 4.0 supporting motherboard, then the Seagate FireCuda 520 is a very good option, but it's just a bit too pricey to unequivocally recommend right now. It's got that very good endurance rating and with its PCIe 4.0 support, will remain useful in any system for many years to come.

CHRIS SZEWCZYK PC

+
- Super fast storage
- Great software tools
- Excellent endurance

-
- A bit too pricey - but only for now

VERDICT: **The FireCuda 520's performance is top shelf, but the competition is tough.**

9

Indicates Best Result

	Crystal Disk Mark				Anvil Storage Utilities
	Read MB/s		Write MB/s		Score
	Seq	Random 4k	Seq	Random 4k	
Samsung 970 Evo 1TB	3526.6	54.12	2517.7	227.2	16523
Seagate FireCuda 520 1TB	4997.4	63.32	4469.4	259.3	20910
Western Digital Black SN750 1TB	3492.4	54.56	2943.6	224.8	16823

EXTERNAL STORAGE

Seagate FireCuda Gaming Dock

A Thunderbolt docking station and external HDD in one.

PRICE $599
www.seagate.com

Docking stations aren't anything new, and neither are external hard drives, but how about combining them both? That's exactly what Seagate has done with its FireCuda Gaming Dock. It combines the plug and play ease of an external HDD with the connectivity options of a dock into a single unit that's connected via a Thunderbolt 3 cable. We have to say, it really looks awesome too.

The FireCuda Gaming Dock is a somewhat unusual looking device. The majority of it is basically a drab looking box, but there's a stylised section that features RGB lighting, and the overall effect is a fantastic combination of subtlety and bling. It really does look like a sophisticated piece of kit.

It comes with a built in 4TB hard drive. Some users might question why there isn't an SSD included, but fear not. There's an M.2 slot that supports NVMe, so you can add one and enjoy fast, low latency storage combined with the hard drive for file storage. Gamers will appreciate the extra speed on offer from an SSD as opposed to typical external HDD.

The Gaming Dock connects via a Thunderbolt 3 cable. There's also a pass through for connecting other Thunderbolt 3 devices. It's powered by an external power adapter, so there won't be any problem powering a bunch of different devices.

These days, despite the increasing shift towards Type-C USB on compact laptops, people still use Type-A devices. The FireCuda dock comes with four USB 3.1 Gen 2 ports so there should be enough Type-A ports to cater for most users' needs. There's an additional USB port that supports charging which will come in handy for juicing up tablets and phones.

You also get a gigabit Ethernet port. This is something that very few ultra-thin models have due to the height of the port. Wi-Fi has come a long way in recent years, but you can't beat the reliability of a good old LAN connection if you have the option.

Additionally, there's a pair of 3.5mm audio in and out ports and a particularly welcome DisplayPort 1.4 connector. This will be an essential feature for users wanting to send their laptop's output to a monitor.

Setting up the FireCuda dock was as simple as plugging in the unit. All the ports were recognised without requiring any extra setup or driver installation. You should download Seagate's Toolkit software which includes functionality including backups and RGB control. We also noted the RGB lighting is very bright, thankfully you can dial it down a bit. Our impressions of the FireCuda Gaming dock only got better as we tinkered with it. It provides a comprehensive set of ports and flexible storage that's incredibly simple to use. It's the kind of device that will seem like a total system upgrade, without having to actually upgrade the system. If you've got a Thunderbolt 3 equipped laptop, then it should have something that you'll take advantage of. Gamers, professionals and enthusiasts will find the FireCuda Gaming dock does a little bit of everything, and it does it with a touch of class too.

CHRIS SZEWCZYK PC

+
- Effortless setup
- Pleasing design
- Performance + versatility

-
- Does it really need RGBs?

VERDICT: **Seagate's FireCuda Gaming Bock is a terrific one box way to add additional storage and connectivity options.**

9

INVENTORY

THE BEST BUILD FOR EVERY BUDGET

CONTROLLERS

Sometimes you gotta go mouse + keyboardless

Xbox One Controller
$69 *microsoft.com/en-au/*
Plug and play meets comfort. Every PC needs a controller and this is the best

Steam Controller
$89.95 *store.steampowered.com*
There's a bit of a learning curve, but it's great for couch gaming

MODEM ROUTERS

For all rational budgets

BUDGET

Synology RT1900RT
$169 *synology.com*
Good performance and delightfully easy to set up and manage

Synology Router RT2600ac
$328 *synology.com*
Perfect for all but the biggest families, has unusually strong transmission strength

PREMIUM

Asus ROG Rapture GT-AC5300 Gaming Router
$695 *asus.com.au*
Super fast and future proof, this is a gaming router that takes no prisoners and offers no compromise.

LAPTOPS

Gaming on the go

BUDGET

Dell G3 15
$1,599 *www.dell.com*
8th-gen CPU and a reasonable GTX 1050 is a bargain basic gamer

PREMIUM

MSI GS75 Stealth 8SG
$4,799 *msi.com*
Now boasting RTX power!

MINI

For lounge room gaming and streaming

CPU + COOLING
Intel Core i5 7500 w/ stock cooler
$235
intel.com

MOBO
Asrock Z270M-ITX/AC Motherboard
$185
asrock.com.au

GPU
Asus DUAL-RX480-4G
$338
asus.com.au

MEMORY
16GB DDR4 Corsair Vengeance LPX
$249
corsair.com/en-au

STORAGE
Samsung SSD M.2 2280 NVMe 250G 960 EVO + 2TB HDD (any)
$169 + $50 *samsung.com/au*

CASE
Fractal Design Define S Nano
$115
fractal-design.com

PSU
SilverStone SFX Gold 500W SX500-LG
$110
Silverstone.com

SOUND
Your sound system
What you paid for it

DISPLAY
Your TV
What you paid for it

KEYBOARD
Roccat Sova
$199
www.roccat.org

MOUSE
Roccat Kone EMP
$99
www.roccat.org

TOTAL: **$1,749**

BUDGET

The perfect entry-level gaming PC

CPU + COOLING
AMD Ryzen 5 2600 + Wraith cooler
$235
amd.com

MOBO
Gigabyte B450 Aorus Pro Wifi
$229
gigabyte.com.au

GPU
MSI RX 580 Gaming 8GB
$399
msi.com

MEMORY
Adata XPG Spectrix D60G
$159 *xpg.com*

STORAGE
Sandisk SSD Plus 240GB
$85 *www.sandisk.com.au*

CASE
Corsair Carbide SPEC-02 Mid Tower Gaming Case
$80 *corsair.com/en-au*

PSU
SilverStone Strider Essential 500W ST50F-ESB **$55**
silverstone.com

SOUND
Razer Kraken X
$89
www.razer.com

DISPLAY
AOC Q3279VWFD8 75Hz Freesync 32in IPS
$299
au.aoc.com

KEYBOARD
Tesoro Tizona G2N
$49
tesorotec.com

MOUSE
Cooler Master MM530
$59
coolermaster.com

TOTAL: **$1,729**

ASUS®
No.1 in Quality & Services
- The Wall Street Journal Asia
RT-AC5300
Wireless-AC5300
Tri-Band Gigabit Router

Okay, so I'm gonna take a liberty here – I absolutely LOVE the new HyperX headphones reviewed this issue. I know our reviewer has had some issues, and these are fair problems to point out, but I've been using them as well and they've become my standard set of gaming cans. Call them the Editor's Choice, if you will. I know they're bumping out a pair of Sennheisers – a truly beloved brand – but they're currently my Performance audio option. *-Ed*

PERFORMANCE

Most bells and whistles, without breaking the bank

CPU + COOLING
Intel Core i7 8700K with Noctua NH-D15 CPU Cooler
$529 + $115 *intel.com*

MOBO
Asrock Z370 Taichi
$284
asrock.com.au

GPU
MSI GeForce RTX 2070 Gaming Z 8G
$1069
au.msi.com

MEMORY
Crucial Ballistix Sport LT 4X8GB
$268
crucial.com

STORAGE
2TB HDD (any) + SAMSUNG 500GB M.2 NVMe SSD 970 EVO PLUS
$199 + $50
samsung.com/au

CASE
Fractal Define R6
$209
fractal-design.com

PSU
Be Quiet! Dark Power Pro 11 850W Power Supply
$279
bequiet.com

SOUND
HyperX Cloud Flight S NEW!
$349
www.hyperxgaming.com

DISPLAY
Asus ROG Strix XG32VQ
$859
www.asus.com/au

KEYBOARD
Cooler Master MK750
$189
www.coolermaster.com

MOUSE
SteelSeries Sensei Ten
$119
www.steelseries.org

TOTAL: **$4,518**

THE BEAST

When overkill is barely enough...

CPU + COOLING
AMD Threadripper 2 2990WX + Corsair H105
$2,699 + $145
amd.com

MOBO
Asus ROG Zenith Extreme
$559
asus.com.au

VIDEO
Nvidia GeForce RTX 2080 Ti
$1,899
nvidia.com/en-au

MEMORY
4x8GB G.Skill Trident Z RGB quad-channel 3466MHz DDR4
$745
gskill.com

STORAGE
Samsung 960 Pro 2TB + Seagate Barracuda Pro 10TB
$1,589 + $599
samsung.com/au

CASE
Thermaltake Level 20 GT
$369
thermaltake.com.au

PSU
Corsair RM1000i Special Edition
$279
corsair.com/en-au

SOUND
Steelseries Arctis Pro + GameDAC
$349
steelseries.com

DISPLAY
Alienware AW3418DW
$2,099
alienware.com

KEYBOARD
Corsair K95 Platinum RGB
$249
corsair.com/en-au/

MOUSE
Corsair M65 RGB Elite
$85
rcorsair.com/en-au/

TOTAL: **$11,665**

Tri-band data rate of of 5334 Mbps
Ultra-fast 802.11ac Wi-Fi router
Smooth 4K/UHD video playback

2.4 GHz 1000 Mbps
5 GHz-1 2167 Mbps
5 GHz-2 2167 Mbps

Exclusive Built-In Game Accelerator

HotWare, with Terrence Jarrad

01

02

03

04

05

ECHO SIGMA BUG-OUT BAG

PRICE $250 • **DISTRIBUTOR** ECHO-SIGMA
echo-sigma.com

As we wall ourselves up inside our homes, it's difficult not to want to be more prepared. Something that could help is a bug-out bag. With a bit of research it's easy to build your own, customised to your needs, but if that sounds like too much work and you still want that safety net, consider something pre-made.

POWERED UP: Rations, tools, first aid kit, safety gear, weather protection... you get the idea. All the essential items you'd need for immediate survival if you ever had to just get up and go.

PLAYED OUT: Feels like a short step from this, to burying a bunker in your backyard.

ASTRO SLIDE 5G

PRICE $839+ • **DISTRIBUTOR** PLANET
https://bit.ly/2ytAgXA

Haven't we been here before? The world had these phones already! Samsung and LG had old versions of this design, Nokia had a full keyboard that flipped OVER the screen, and Blackberry clung to its QWERTY design like its life depended on it. We didn't know anyone still wanted this.

POWERED UP: QWERTY phone for the modern era. 5G, 48MP camera, Android 10, Linux support with multi-boot.

PLAYED OUT: Weird they named it after a lube (I get that joke! -Ed).

OFF-GRID CYBERDECK

PRICE INGENUITY + PARTS
DISTRIBUTOR NOT REALLY.
https://bit.ly/340KIoJ

The streets are deserted. Supermarket aisles cleared of toilet paper. This is our grim reality. So when humanity fails us, and society crumbles, and the EMPs rain down, what happens to our PCs? How will we game on this, our platform of choice? Well, let's start by building a PC to survive all that.

POWERED UP: A portable, self-contained, Raspberry Pi-based computer. Features some level of water resistance, shielded storage, internal battery.

PLAYED OUT: You can't buy it, but there's a comprehensive guide and list of parts – get building!

CUSTOMISED SWITCH

PRICE $500 • **DISTRIBUTOR** NINTENDO
https://bit.ly/3cnZXYu

The Switch is sold out pretty much everywhere thanks to quarantine, but in Japan, Nintendo is offering customised Switch builds!

POWERED UP: Select your Joycon colours – mix and match as you like from a fairly wide selection. Select microSD card size, throw in a few games, grab accessories like cases and pro controllers – basically everything you need to have your Switch set up just the way you want.

PLAYED OUT: Would love to tell you if it's possible to ship here, but can't read Japanese. C'mon Nintendo, don't hold out on us man!

BILL & TED'S EXCELLENT PHONE BOOTH

PRICE $14,000 • **DISTRIBUTOR** CUBICALL
https://bit.ly/2KfGKMn

For those of us of a certain age, it's really hard to watch John Wick and not associate Keanu Reeves with one of his most formative roles in cinema – Bill & Ted's Excellent Adventure. In the movie, the phone booth is a bit like Dr. Who's Tardis. Except, you know, it's just a phone booth.

POWERED UP: Officially licensed! Authentic payphone cubical topped with an umbrella antenna, which can connect via landline or VOIP.

PLAYED OUT: Cubicall is doing this as a limited run. Oh and it doesn't actually time travel. Bogus.

RETRO SPECIAL
Looking back at doom, Half-Life, & more!
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How to be heard in style!
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We go back to the Forgotten Realms
AUSTRALIA'S #1 PC GAMING MAG
PC PowerPlay
SINCE 1996
DOOM ETERNAL
The classic shooter is back, And more brutal than ever before!
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How Halo made the long journey back to the PC
PREVIEW
WORLD OF WARCRAFT
SHADOWLANDS
DEATH IS NOT THE END, AS WE DELVE INTO THE NEXTEXPANSION FOR BLIZZARD'S FLAGSHIP MMO
Threadripper 3990X
AMD's BEAST of a CPU put to the the test!

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Explore the galaxy from the comfort of your own bridge.

Star Trek: Bridge Commander

Revisiting the greatest Star Trek game.

DEVELOPER TOTALLY GAMES • **PUBLISHER** ACTIVISION • **RELEASED** MARCH 8, 2002
bit.ly/bridgecommander

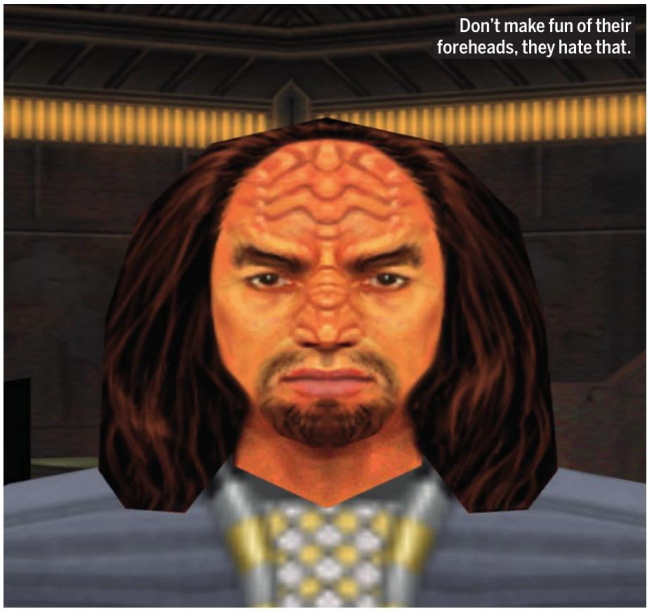
If you've ever been a Star Trek fan, you've probably imagined what it would be like to sit in the captain's chair of a Federation starship. Over the years there have been dozens of Star Trek videogames on PC, from point-and-click adventures to first-person shooters. But Star Trek: Bridge Commander is the closest a digital recreation of the show has ever gotten to deeply simulating the experience of being in command of a Starfleet vessel.

The game starts with a bang, literally, as a star mysteriously destabilises and explodes, killing the captain of the USS Dauntless. The ship's relatively inexperienced first officer (that's you) is then forced to take over command and find out what caused the explosion. Your character is a completely blank slate who never speaks and is never seen, or even named, with first officer Saffi Larsen doing most of the talking for you.

This is initially a little distracting, as charismatic captains who make their opinions known are an important part of the classic Star Trek format. But it does ultimately add to the role-playing aspect of the game, making you feel like you are the captain, and not just in control of someone else. At the start of each mission you'll get the usual Star Trek-style logs, explaining the current mission objectives. But because of your total lack of a voice, these are read out by other members of the crew instead.

On the bridge, the game is locked to a first-person perspective, and you never leave the captain's chair. To issue orders you have to turn your head with the mouse and face the appropriate member of the bridge crew, then choose from a list of commands. So if a Romulan Warbird suddenly de-cloaks, you turn to Larsen on your right and ask her to go to red alert, which powers up your weapons and shields. It also dims the lights on the bridge, just like in the show, which is a nice touch.

You can also go to yellow alert, which boosts your shields but leaves your weapons inactive: a good way to show an enemy that your guard is up, but you don't want a fight. But in most cases you'll be forced to defend yourself, because Bridge Commander is very heavy on combat, which is actually my biggest criticism of it. I love Star Trek, particularly The Next Generation, because conflict is usually a last resort. If Captain Jean-Luc Picard can solve a problem without


Don't make fun of their foreheads, they hate that.

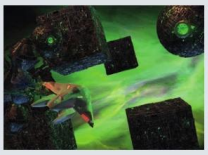
Just waiting for commands.

firing a phaser, he always will. But in the game, pretty much every mission results in a space battle. It's primarily a combat sim.

In the middle of a battle, power management is key. Swing your head around to your left and you'll see your Solian chief engineer, Brex. Through him you manage your ship's power output via a series of sliders. If you want a wider scan of the area, boost power to the sensor array. If you're having trouble punching through an enemy's shields, boost your weapons. And if your own shields are taking a hammering, diverting extra power to them will increase your resilience to whoever is currently firing at you.

Characters in Star Trek are always diverting power to various systems to increase their effectiveness, so it's marvellous to see that turned into a game system in Bridge Commander. But it's all about the balancing act. Pull too much juice from the ship and your power transmission grid won't be able to cope, reducing your overall effectiveness. This power-juggling mechanic is at the core of the game's many battles, and yelling orders at Brex as the bridge shakes and sparks fly out of the consoles can be hugely exciting.

DEEP SPACE *Some great* Bridge Commander *mods*



DELTA QUADRANT PACK – JL STUDIOS

In Star Trek: Voyager, the titular starship got lost in the dangerous, uncharted Delta Quadrant. This pack includes 44 ships and 20 planets from the show, including Voyager itself and several Borg craft.

CROSSFIELD CLASS – THATGUYBRIAN

This adds Discovery's Crossfield class starship to the game. If you've ever wondered if the Discovery could take the Enterprise in a battle, this is your chance to pit them against each other.

DEFIANT BRIDGE – LUROK91

If you fancy a change from the game's default bridge designs, this replaces it with that of the USS Defiant – a warship that played a major role in the events of Star Trek: Deep Space Nine.

BETTER STARFIELD – IGNIS

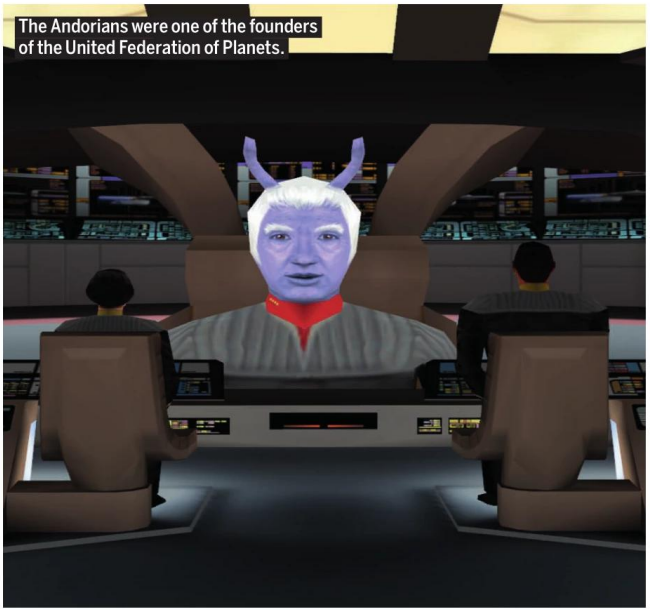
Bridge Commander's default starfield is distractingly bad, with the same handful of stars repeated infinitely. This replacement by Ignis is vastly superior, and gives a sense of distance.

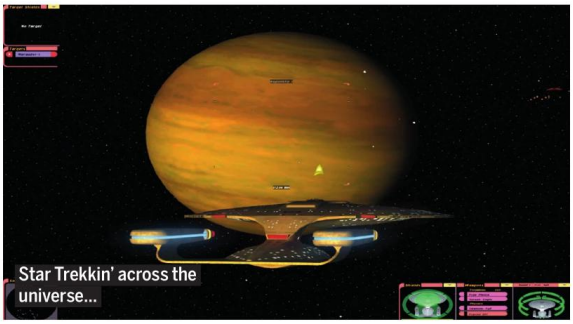
ORDER UP

Bridge Commander captures the drama of a Star Trek space battle brilliantly. The screen judders as you take damage, the red alert alarm wails, and your crew shout updates about the status of the ship and the enemy's movements. You can order your tactical officer, Felix Savali, to target and attack at will or you can step in and take control, manually targeting and firing the ship's arsenal of phasers and photon torpedoes.

Honestly, most of the time you'll rely on Savali to do the hard work,

Make it so! Number one! Engage!


The Andorians were one of the founders of the United Federation of Planets.


Star Trekkin' across the universe...

because battles can go on for a long time in Bridge Commander. Sitting back, saying "make it so", and letting someone else do the work feels a lot more captain-like anyway.

There are some non-combat mission objectives, including delivering VIPs, rescuing people, beaming people aboard your ship, and picking up cargo. But this all happens off-screen, with your crew merely telling you about it rather than you witnessing it first-hand. It would have been nice to leave the bridge and visit other locations. Maybe stopping at Ten Forward for a drink, or checking up on someone in sickbay. But in this game, the life of a captain takes place entirely on the bridge. Even just taking a few conversations in your ready room would have added visual variety.

At any time you can hit the spacebar and switch to a third-person view, which gives you a clearer view of your surroundings. There are some dramatic visuals here, including colourful alien suns and asteroid fields, but technically it's pretty ropey, with distractingly low-res textures. You can fly the ship manually in third-person, but it's much more Trek-like to switch back to the bridge and order your Bajoran flight controller, Kiska LoMar, to move the USS Dauntless between planets and other points of interest.

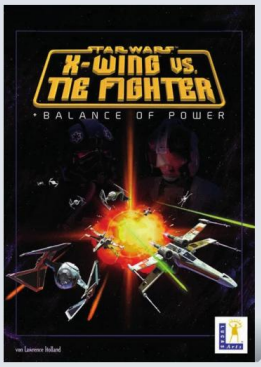
But after a few hours of play, you'll almost certainly get sick of your crew repeating the same handful of barks over and over again during combat. "Moving into attack range! Lining up forward torpedo tubes! Sweeping through phaser arcs!" Sound design is one area Bridge Commander falls short, with a forgettable, repetitive soundtrack, and some missing details like the rumble of your ship's engines. The weapons sound great and the voice acting is decent, but overall it's a bit of a sonic mess.

However, you can remedy this. I muted the in-game music and played the score from Star Trek: The Next Generation instead, which you can find on Spotify. I also found a ten-hour loop of the ambient engine sounds from the show on YouTube, and played that quietly in the background. This is possibly the nerdiest thing I've ever done, but man, it really improves the game. And thanks to a vibrant modding community, there are countless other ways to tinker with the experience, whether you want to improve the visuals or command ships

FINAL FRONTIER

A brief history of Bridge Commander

Prior to creating *Bridge Commander*, California-based developer Totally Games worked on a number of classic space sims, including the *X-Wing* and *TIE Fighter* series. It was then approached by Activision in 1998 to make a game based on Star Trek, and the studio spent six months researching, designing, and testing out ideas, until it settled on giving players the chance to sit in the captain's chair aboard a Federation starship. Totally Games later developed PC flight sim *Secret Weapons Over Normandy*, before shifting its attention to mobile games. Its final release was back in 2011.



from the other Star Trek series.

There's some nice stuff in Bridge Commander for Star Trek fans, including guests occasionally joining your crew. In your first stint as captain you're joined by none other than Jean-Luc Picard, who sits beside you and explains some of the game's systems. Getting Patrick Stewart to reprise his role as Picard, and then using him as essentially an interactive tutorial, is a wasted opportunity. But it's still cool to hang out with him regardless, and just hearing his voice lends the game extra authenticity.

You're also joined by Data, voiced by Brent Spiner, when you swap the USS Dauntless for the USS Sovereign partway through the story. Like Deep Space Nine's USS Defiant, the Sovereign was developed after the Battle of Wolf 359 to defend against the Borg. It's a more advanced ship and nimbler in battle, but I must admit, I prefer the bridge of the Galaxy class Dauntless, which looks just like the one in TNG – albeit with some different colouring.

KESSOK RUN

While aboard your ship, Data determines that the exploding star was not a natural event. This revelation leads to clashes with the Cardassians and a race of aliens invented for the game called the Kessok. Occasionally enemies will hail you, either to surrender or to gloat, which adds to the Star Trek vibe. But I would have liked the option to engage in a little diplomacy, perhaps choosing from dialogue options to try and talk aggressors down or offer to work together. If they ever make another Bridge Commander, this would add some much needed non-combat variety.

> "Data determines that the exploding star was not a natural event"

If you're feeling the urge to replay Star Trek: Bridge Commander, you'll be glad to hear that it runs out of the box on Windows 10 without any messing around – although you will want to install the official 1.1 patch first. Finding a copy, however, might be a little trickier. It's been out of print for years, and no digital storefronts currently offer it. This is the case for a lot of Star Trek games, but thankfully there are several websites that archive these hard-to-find gems. There's always a way. But I'd love Activision to do a proper re-release or remaster. With Discovery and Picard getting people into Star Trek again, there's never been a more perfect time.

It's hardly a looker – even by 2002 standards – but gaze beyond the low-poly characters and strangely flat-looking viewscreen conversations and developer Totally Games did a very decent job of capturing the ambience of a Star Trek ship. And if you can't stomach the lo-fi visuals, you could always give Ubisoft's Star Trek: Bridge Crew a go. It offers a similar experience, with modern production values, a TNG-themed bridge and VR support. But it's not as deep as Bridge Commander, designed with accessibility and co-op play in mind, so it's not quite the same. Not many vintage Star Trek games are worth playing today, but sitting in the captain's chair in Bridge Commander still has the power to thrill

PC ANDY KELLY

Why I love... Climbing the leaderboards in Hitman 2

Improving my time gave me a greater appreciation for IO's stealth sandbox.

RELEASED NOVEMBER 13, 2018
hitman.com

RIGHT: 47's only gone and locked himself out of the house again.

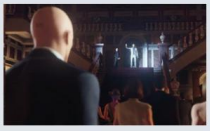
When our former editor-in-chief Samuel Roberts tweeted that he'd claimed the top spot on the leaderboards for the Hawke's Bay level of Hitman 2, I felt like I had something to prove. I'd reviewed Hitman 2. I'd reviewed every episode of 2016's Hitman. While I'm open to the possibility that other people are better at the series than me, I wasn't about to let someone who worked for the same magazine hold the top spot.

I returned to the New Zealand beach house and started optimising. Maybe if I hid over here? Perhaps if I tossed a coin over there? An hour of experimentation later, and I'd beaten Samuel's score. I'd also realised there's much more I could do. My current time was fine, but I was pretty sure it could be beaten.

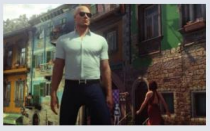
Hitman is an interesting leaderboard game because speed isn't everything; you also need style. The conditions required for a Silent Assassin run – never spotted, no noticed kills, no bodies found, no recordings – each award a flat 20,000 points, for an 80,000 score bonus. Without that, it doesn't matter how fast you finish, you'll struggle to earn enough points to reach the top. Isolating the mission's target, Alma Reynard, takes time. As more people joined our ad-hoc competition for score supremacy, and as our completion times reached down to the three minute mark, it was clear that further gains would require inventive solutions.

For me, Hitman isn't really a game about killing. That's just set decoration for an intricate puzzle box of interlocking systems and behaviours. Chasing a good score often means exploiting the consequences of Hitman's consistent ruleset in a way that further strips the already flimsy sense of immersion. You don't lose your Silent Assassin rank, for instance, if a body looks like it died a natural death. You can lace a drink with poison, and, when the body's found, it'll be written off as a heart attack. That rings true even in the most absurd extreme. Which means if I toss a coin to distract Alma's guards and then inject Alma with a poison syringe in the brief moment they look the other way, I still get a Silent Assassin rating. I also get a time of 1:46, thoroughly beating the rest of the group.

TIME TRIAL *Can you beat my scores?*



PARIS
THE SHOWSTOPPER
Score: 183,698
Time: 3:17
Tip: Find the right starting condition and make good use of drainpipes.



SAPIENZA
WORLD OF TOMORROW
Score: 163,623
Time: 11:22
Tip: Find a better route. My one is pretty stupid.

HAWKE'S BAY
NIGHTCALL
Score: 195,744
Time: 1:46
Tip: Just syringe and run. Syringe. And run.

COLORADO
FREEDOM FIGHTERS
Score: 94,630
Time: 25:16
Tip: I botched this one and I don't want to do it again. Here's a freebie.

> "Played at this speed, it's less about waiting as it is sprinting with precision."

TRIGGER HAPPY

Sapienza is Hitman's best level, and also the leaderboard time I'm most proud of. After trading back-and-forth with Samuel, I held the lead with an 11:22 run.

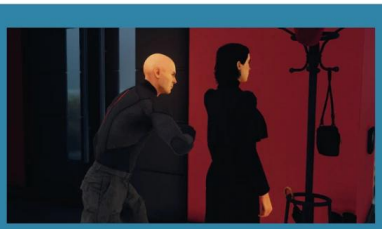
Beginning in the mansion grounds disguised as a gardener, I run to a water bottle on a nearby table and spike it with emetic. Then I make a bee-line for the observatory. There's a VHS tape on the top floor that, when open-palm slammed into the video player below, causes my first target, Silvio Caruso, to encounter a projected screen of childhood memories. He dismisses his guards to reminisce and I kill him and hide his body. The first target is down in less than two minutes.

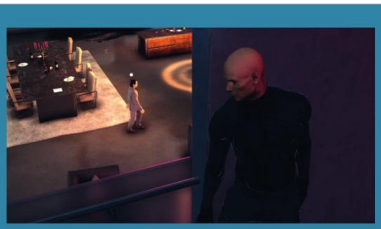
I run to a bathroom near the observatory and find Caruso's golf coach puking his guts out thanks to the water I'd laced. This is the crux of my run, firing triggers to line up events so they complete after I've finished doing something else. After the coach is subdued, I call his lover, my second target, to arrange a rendezvous. I sprint to the church on the other side of town to stand by the confession booth to trigger an event. I sprint back to the mansion to kill the second target, who's moved to a less secure location to meet her paramour. I sprint back to the church, arriving just in time for the conclusion of the event I triggered – letting me steal an item that quickly completes the final objective. Played at this speed, it's less about waiting as it is sprinting with precision.

I've always loved Hitman as a sandbox full of things to be poked and exploited. But it wasn't until I started competing for score that I realised just how little of its already flimsy sense of immersion I needed. Give me a playground of overlapping AI behaviours, an objective, and a need to be the best – more out of spite than pride – and I'll enjoy hours trying to build a route that's, most importantly, faster than Samuel.

PC PHIL SAVAGE

RIGHT: Quickly, quickly, stabby monkey.





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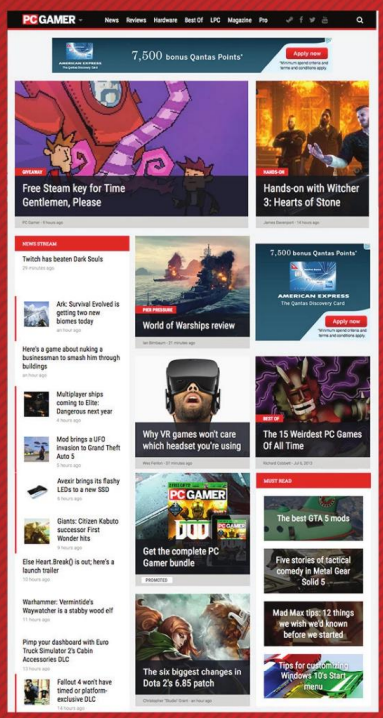
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